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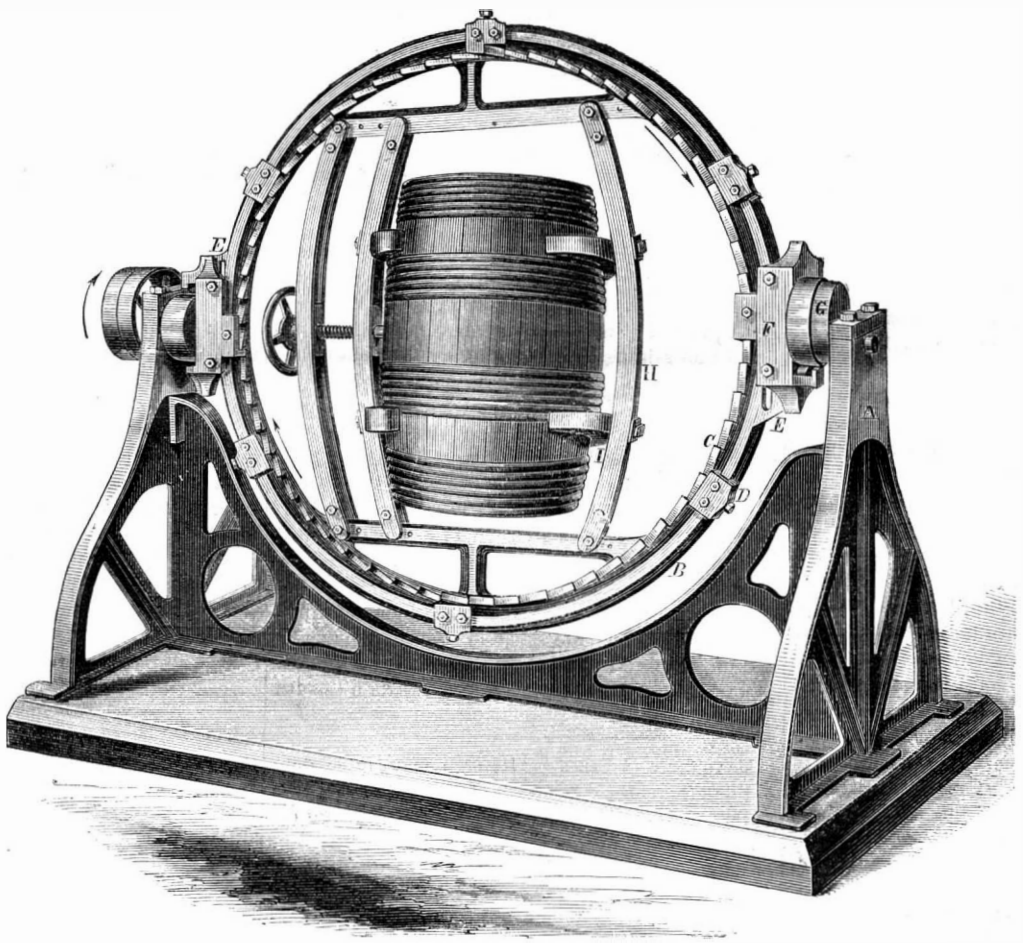
Improved Cask-cleaning Machine.

The engraving published herewith is a representation of a new and ingenious machine for cleaning casks, and also scouring small articles of hardware, or removing the sand which adheres to them in the process of casting. The machine is very compactly arranged, strong and not liable to derangement. As much interest is now manifested abroad and also at home, in machinery of this class, we think a description of it will be appreciated by our readers.

The main idea is to rotate a cask on an axis, and also to continually change its position in an opposite direction, so that two movements are produced, which, in connection with sharp graveland water, or small chains, will soon scour the interior of the most musty cask clean and bright. To effect this object the frame, A, of the machine is provided with a circular ring, B, to which is accurately fitted an inner ring, C, having ratchet teeth upon its face. This ring is retained in place by several guides, D, provided with pawls, said guides being well secured to the outer ring, B. This outer ring has, further, a slot, E, on each end near the bearings, in which the sliding jaws, F, work; these jaws have small friction rollers in them, which embrace a fixed eccentric, G, on the frame, A, and which cause, as the circle is revolved by power or otherwise, a reciprocating movement of the jaws back and forth on the outer rings. As these jaws are fitted with small pawls it follows, as the latter strike in ratchet teeth, C, that the inner ring is driven around in the direction of the arrows, carrying with it the barrel fastened to the square frame, H, and confined by the screw clamps, I, which can be adjusted to any size of cask by the holes in the upper ends. It will therefore be seen that, by the two motions thus obtained in a compact form (shown by the arrows), that the barrel is tumbled about in all directions for the purpose previously set forth. These machines can be made of all sizes, and may be driven by either steam or hand power.



ROBINSON'S CASK-CLEANING MACHINE.

A patent on this invention was ordered to issue through the Scientific American Patent Agency to Wm. Robinson, of Bridgewater, England. Further information can be had by addressing Geo. B. Turrell, assignee, 626 Washington street, New York.

Zinc Casts.

In the *Dental Cosmos* Dr. J. C. Harday, of Charitan, Iowa, gives the following plan for the production of zinc casts, which he considers more perfect than those obtained by any other method:—"Take plaster-of-Paris, 2 parts; coarse sand, 1 part; grind together in a mortar; mix with water to a proper consistence, and pour into a suitable vessel; then impress the plaster cast into the mass, and just as it begins to solidify, remove the cast; then pass a fine knitting-needle or wire through the sand in two or three places into the impression, so that the steam formed can pass off without agitating the metal when poured." He also speaks favorably of a plan which he has adopted, of attaching a piece of gum-elastic, with a hook at the other end, to the ordinary mouth distender. After sufficient distention has been made, the hook can be fastened in the clothing of the patient, and retained with ease.

MORBID TASTES.

A curious example of perverted taste is found in the ornaments (?) or personal decorations now exhibited in many of our large jewelry establishments. These decorations, if it be not a misnomer to call them so, are faithful representations of old wood screws, sheathing nails, and the rough spikes used principally in heavy wood-work and ship carpentry. So accurately are they copied from the originals that, on meeting some of the flashy individuals who wear them, one would think that he had come direct from a junk-shop or scrap-heap, and had picked up what was there thrown away as useless. Last summer, while sojourning at a large watering-place for a brief period, we noticed a debilitated individual in the last stages of consumption, so emaciated that every step he took was accompanied by a distressing cough which threatened dissolution on the spot. This gentleman had a breastpin also: what does the reader suppose it was?—*a skull and cross-bones;* truly a charming and very fitting *memento mori.* The very apparent approach of his end was not enough, without some visible symbol of dissolution. The heads of canes are also thus decorated, and some men sport these "little trifles" in the street and drawing-room with airs of great complacency, priding themselves, apparently, upon their exclusive taste. Quite recently we noticed a *carte de visite* called "blossom and decay," in which the figures of two youths, male and female, are skilfully grouped under a white arch, with such effect that at a distance the whole picture resembles a grinning skull, but closer inspection reveals the artifice. Now everything in nature has its place, and it is, or would be, just as sensible to drive a diamond pin into a board as to take a nail for a breastpin. Screws are not ornamental, they are useful; and it is an utter perversion of their objects and ends to apply them in the manner spoken of. We are not disposed to exaggerate the matter, or lay undue stress upon it; men will wear just such ornaments (?) as please their fancy; but if ironmongery is to be the rage, we should like to know it; as there are a great many skilful inventors who can originate very much better things in this line than jewelers. Some five-eighth bolts strike us as novel designs, and a neat thing in the way of a breastpin would be an old oil-can with the bottom knocked out, a couple of lathes, or a cylinder head; another handy pattern may be found in a small cooking stove; each and all of these things furnish examples for imitation, which in the general taste for ironmongery ought not to pass unimproved.

AN ORDER OF MERIT FOR WORKING MEN.—Belgium possesses an order of merit for industrial and agricultural laborers. The decoration worn by the members has just been modified by royal decree, and now consists of a medal bearing an emblematical figure representing manufactures or agriculture, as the case may be, upon a black enamel ground, surrounded with a red border. The design is enclosed within a fillet, on which are inscribed the words "Skill; morality." Around the whole is a wreath of laurel in blue enamel for artisans, and green for agriculturists, surmounted by the arms of the country, suspended to a royal crown. The decoration is suspended to a ribbon of the national colors, which, however, cannot be worn without a medal.

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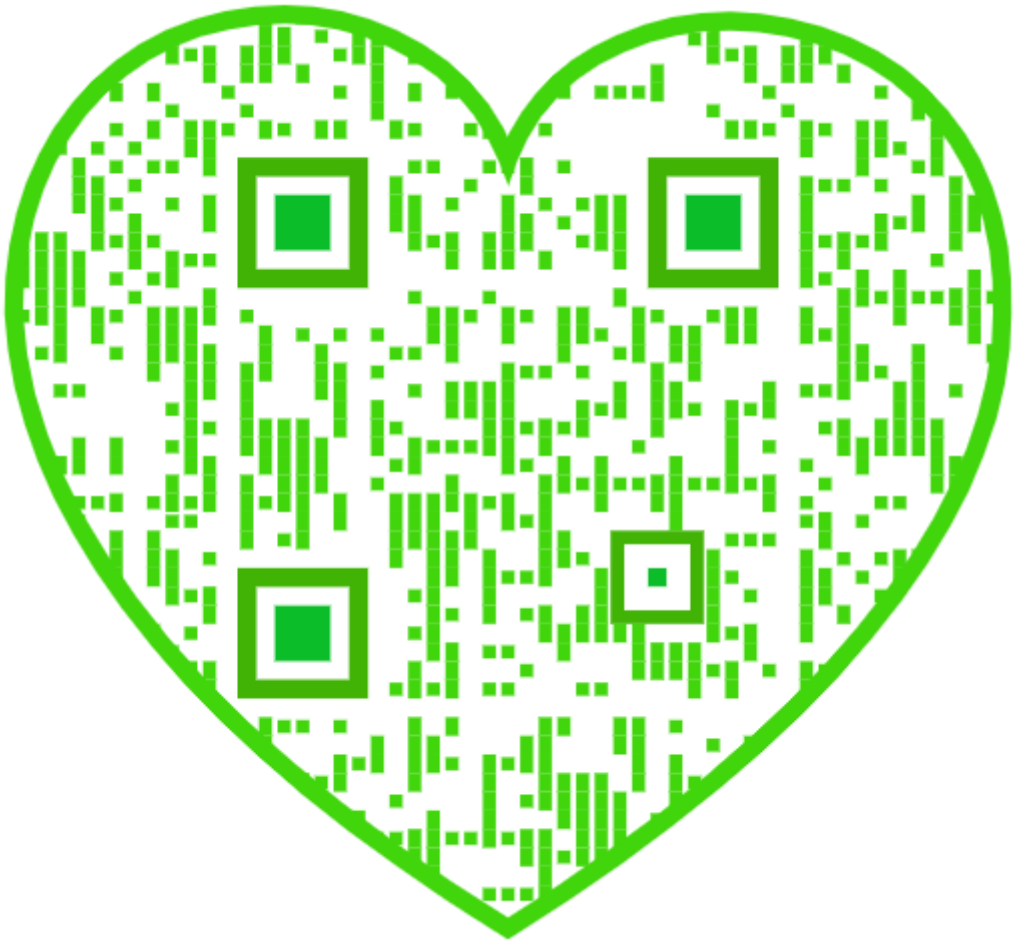

NEW BOOKS AND PUBLICATIONS.

ATLANTIC MONTHLY. Ticknor & Fields, Boston, Mass.

The December number of this invaluable magazine is before us, and with it we find the publishers' announcement of the completion of the 12th volume, and a plan of campaign for the forthcoming year. We must say that from the intentions of the publishers, as developed in their programme, the readers of the "Atlantic" have a bright prospect. Such men as Longfellow, Hawthorne, Agassiz, Lowell, Sumner, Everett, Bryant, and all the time-honored names in American literature added to a host of lesser, but to be bright, stars in the firmament of literature, are spoken of in connection with the approaching year. Some features of peculiar interest are announced for which we shall look eagerly, and there are poems by Robert Browning, a new romance by Hawthorne, some portions of a translation by Longfellow, of the "Divina Commedia" of Dante, and also new sketches by Harriet Beecher Stowe. In natural science, Agassiz will continue those pleasing articles which have been so popular in the past volume. The December number is unusually interesting to practical men of the world, containing, among other articles, "The Great Air Engine," "The Man Without a Country," "Structure of the Glacier," &c.

CAMPIN'S PRACTICAL MECHANICAL ENGINEERING. Published by Henry Carey Baird, Industrial Publisher, 406 Walnut street, Philadelphia.

The artisan who expects to keep pace with his fellows and wishes to be considered well up in his profession, cannot afford to neglect any means which promise him advantages in this respect. Among all the methods for acquiring information of the kind in question, standard books upon peculiar or specific subjects must always be considered of primary importance. Year by year, the list of mechanical books increases, and there is yet a wide field open for improvement, not only in the character of the works themselves, but in the nature and variety of the subjects discussed in them. In the work whose title heads this article, the reader will find a most attractive and excellent compilation of several subjects, principally those upon which every mechanic should be informed. We find one portion that might have been expunged in the American edition—Mr. John Bourne's opinion of Mr. C. Wye Williams; the public are not particularly interested in the disagreement of these persons, and the matter alluded to takes up a great deal of space that might have been filled to better advantage. The table of contents is too long to be reproduced in full, but from the appended summary the reader can judge that the book is of the first interest. It is a Practical treatise on Mechanical Engineering; comprising metallurgy, moulding, casting, forging tools, workshop machinery, mechanical manipulation, manufacture of steam engines, &c. With an appendix on the analysis of iron and iron ores. By Francis Campin, C. E., President of the Civil and Mechanical Engineers' Society, &c. To which is added, the modern practice of boiler engineering, observations on the construction of steam boilers, and remarks upon furnaces used for smoke prevention; with a chapter on explosions. By Robert Armstrong, C. E. Revised, with notes, by John Bourne. With rules for calculating the change wheels for screws on a turning lathe, and for a wheel-cutting machine; by J. La Nicca. Also the management of steel, including forging, hardening, tempering, annealing, shrinking, and expansion. Also, the case-hardening of iron. By George Ede. 8vo. Illustrated with 20 plates of boilers, steam engines, workshop machinery, change wheels for screws, &c., and 100 wood engravings. The price of the work is $6, sent free by mail to any part of the country.

COMMON molasses may be clarified and rendered much more palatable by heating it over the fire and pouring in sweet milk in the proportion of one pint to a gallon of molasses. When the molasses boils up once, the albumen in the milk collects all the impurities in a thick scum upon the top, which must be carefully removed, and the molasses is then fit for use. Bullock's blood is also used for this purpose, but milk is more agreeable in many ways for domestic use.

MERINO CLOTH.

A fabric known by the above name is much used for ladies' dresses, and the best qualities of it are very beautiful. It is composed of fine wool, finely spun, is twilled and unfelted. It is soft, light, and has what is usually styled "a rich appearance." The best qualities of it are made in France. These are double-twilled and scarcely differ in appearance on both sides. Another quality is twilled on the right side only. Of course its price is lower than the double twill. English merino, so called, is formed of finely-twisted wool, and although very strong, it is far from being as beautiful as the soft double-twill. Both soft and hard merino cloth are manufactured in England, but the soft retains its French name, because it originated in France. At the present time merino cloth—double fold—which is but a little over a yard wide, is selling for about $2 per yard, and at this price, it must be very profitable to manufacture; for it is a very light fabric, and there are but a few ounces of wool in a yard of it. As this is the most beautiful of all woolen fabrics for ladies' dresses, we hope our textile manufacturers will look to this subject, as quite a number of manufactories may be profitably employed in making such goods. There is no necessity for importing a single yard of such fabrics from abroad, because the whole of the machinery and operations connected with it are simple and uncomplicated. Now is the time to establish and carry on such manufactories. No risk, we think, can attend such efforts, because goods of this character are always in demand and ever will be, as they belong to the "stable interests." No woolen goods take on such attractive colors as this class, and they have a fresh appearance even when well worn and quite old. When the raw material is high in price, fine fabrics are the most profitable to manufacture.

Special Notice.

Solomon Goddard and Henry Warfield, of Truxton, N. Y., having petitioned for the extension of a patent granted them on Feb. 19, 1850, for an improvement in raising and lowering carriage tops, it is ordered that said petition be heard at the Patent Office, Washington, on Monday, the first day of February next. All persons interested are notified to appear and show cause why said petition should not be granted. The testimony in the case will be closed on the 18th of January next.

Also: on petition of William Pierpoint, of Salem, N. J., praying for the extension of a patent granted him on May 7, 1850, for an improvement in straw-carriers, it is ordered that said case be heard at the Patent Office, Washington, on the 18th day of April next. All persons interested are notified to appear and show cause why said claim should not be allowed. The testimony in the case will be closed on the 4th day of May next.

MANGANESE IN STEEL.—Although manganese does not determine the conversion of iron into steel, it is nevertheless certain that—besides rendering steel capable of being welded—it has an influence in improving its quality. When a sufficient quantity of manganese is added to gray pig iron, the carbon of which is to a great extent in a free state, white pig iron is obtained, in which the carbon is almost entirely in a state of combination. The effect is the same with steel; a very small addition of manganese is sufficient to retain the carbon in a state of combination, and, in consequence, to confer on the metal the character peculiar to good steel. However, the amount of manganese in steel must not exceed $\frac{5}{1000}$th; more than that renders steel hard and brittle, the surface of fracture becomes crystalline, and the metal is deficient in tenacity.

GREAT RAILROAD BRIDGE.—The great Ohio River Railroad Bridge at Steubenville, will have the first span completed this season. The structure will be entirely of iron, 1,890 feet long; the channel span of 320 feet, being 90 feet above low water; width of bridge 16.6 feet; weight 5,670,000. Piper & Shiffler of Pittsburgh, are the contractors. This bridge will pass through the Pan-handle part of Western Niagara, and make a short cut to Pittsburgh. The piers for a bridge were erected some years ago at this place, but the old legislature at Richmond prevented the completion of the structure.

Blacking the Brass Work of Lenses.

One or two correspondents have recently asked for information as to the method of producing the black color on the polished part of lenses, stops, &c. The dead black may be produced in various ways, the simplest being the application, *cold*, of a mixture of lamp black and common spirit varnish. This will, of course, rub off with friction. The polished black is produced by what is termed "chemical bronze," which is generally supplied by chemists ready for use, each maker probably having his own precise formula for its preparation. It simply consists, we believe, of a dilute solution of bichloride of platinum. The best strength we cannot state, as we have not had occasion ourselves to use it. Bichloride of platinum is prepared in a manner similar to chloride of gold, by acting on the metal with nitro-hydrochloric acid; the acid solution is then evaporated to dryness, which leaves a reddish brown deliquescent substance, readily soluble in water. If used too strong, its action is too rapid and corrosive; if too weak, it refuses to act at all, especially on some samples of brass. It is best applied to the metal immediately after turning, so as to have a chemically clean and untarnished surface. It is applied with a camel's hair pencil. When the operation is complete, the surface is brushed with a little black lead. We have been furnished with the following formula: 4 drachms of bichloride of platinum, 1 grain of nitrate of silver, in 6 ounces of water. This is said to answer well.—*Photographic News (London)*.

Dartmouth College.

This venerable institution of learning at Hanover, N. H., the *alma mater* of Daniel Webster and other eminent men, is about to enter, we trust, upon a new career of prosperity and influence. On Wednesday the 18th ult., the Rev. Dr. Asa D. Smith, for many years the honored pastor of the Fourteenth Presbyterian church, in this city, was installed as President of Dartmouth College, under very encouraging auspices. We heartily congratulate the trustees of the college upon having secured the services of so able a man: one in every respect so well qualified to take the helm. President Smith graduated at Dartmouth with distinguished honors. He is a ripe scholar, a bland and courteous gentleman, a genial companion; thoroughly executive in his business habits (no details will escape him), and above all, a man of the most exalted christian character. Young men who enter Dartmouth College will find a most warm and devoted friend in the new President. His judicious zeal in their behalf was one of the marked features of his successful pastorate in this city, of nearly 30 years. We speak from an intimate association with him of many years, and can safely predict for the college a bright future.

To Kill Weeds in Ponds.

The Dutch adopt perhaps the most effectual and inexpensive method of killing large masses of weeds in their ponds. They run them dry in the winter, sow a crop of corn on them in the spring, and before filling and stocking them in the autumn, they plant roots of the common white water-lily over a greater part of the bottom. Wherever the water-lily grows, other weeds do not; the stems form no obstruction to the movements of the fish, the leaves give shade, they are easily mown where clear spaces are required for angling, and the decayed leaves form scarcely any mud; indeed, they purify water rather than make it thick, as we see is the case in the Serpentine. In Holland the ponds are dried once in five years, the fish are sent to market, and after the crop of corn is cut they are restocked according to a scale given in a book on fish-ponds, written by Boechius. Carting mud out of ponds is a very expensive business, whereas the cultivation of the bottom of the pond for a few months causes the stock-fish to grow much more rapidly when it is refilled, and before ordinary weeds can overspread it the lilies grow and keep them down.

DURING fourteen years of comparative liberty, 1815-59, the population of Poland increased at the rate of 100,000 a year; in the next twenty-six years the rate of increase was less than 30,000 a year on a larger population. In the country districts, where labor is much needed, the population, owing to the conscription, has remained almost stationary.

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MISCELLANEOUS SUMMARY.

ATLANTIC NEW STEAMSHIP ENTERPRIZE.—A prospectus has been issued in London for what is called "The National Steamship Company," with a capital of £2,000,000 (over ten million dollars) in shares of £100 each. The object is to accelerate the substitution of powerful screw steamers for sailing vessels in the American and other trades. The first step will be to establish lines between Liverpool and New York, of steamers of large size and great capacity, fitted for carrying grain, provisions, and all other kinds of freight, and passengers. Three new steamers for this purpose have already been purchased, nominally, and contracts have been entered into for the building of several others, their capacity to be 3,500 tuns each.

AMERICAN STEAM FIRE ENGINES.—The *Mechanic's Magazine* (London), in an article on steam fire engines, says, respecting the *Manhattan* of New York:—"High speed engines coupled directly to the pumps, are quite capable of doing good service, as our American friends have shown; but, we imagine, with a very considerable waste of fuel. Were it not for the effects produced by wear, the rotary pump, as adopted by the *Manhattan*, would seem to be the best of any; and it is quite possible that this objection may not be found insurmountable."

AMERICAN BUTTER AT HOME AND ABROAD.—At the present moment butter is selling for at least one-third higher prices in New York, than those which prevailed in the early part of last summer. For fair qualities the retail price is thirty-six cents per pound. The cause of this is said to be owing to the vast quantities which were shipped to Liverpool a few months since, to avoid purchasing bills of exchange; and we have been informed that the stores in Liverpool are perfectly glutted with it, and that it is selling at far lower prices there than it now fetches in the city from which it was sent.

ARGUMENTS AND TESTIMONY IN PATENT CASES.—To Solicitors of Patents and others.—The Patent Office is desirous of collecting copies of all the printed arguments and testimony used in patent cases, either in the United States courts, or before the Commissioner, in order to render the Library of the Patent Office as perfect as possible. Persons who have rare and spare copies of such documents will confer a favor upon the Commissioner of Patents by forwarding them to his address, at the Patent Office, Washington, D. C.

THE Cashmere goat furnishes but three ounces of wool to a fleece, and it requires some half dozen fleeces to make one shawl. The shawls are sold at all prices above $1,000, varying with their quality.

RECENT analyses of the water of the Dead Sea show the presence of an extraordinary quantity of bromine, nearly 1½ grains in every ounce of water; and if ever a large demand for bromine arises, an inexhaustible supply presents itself in the waters of this great lake.

NEW PLAN OF WORKING AIR-PUMPS OF STEAM ENGINES.—Large direct-acting steam engines are now made in England without guides or cross-heads of the usual kind, but the air-pump (in low pressure engines) is interposed between the cylinder and crank, and answers the same purpose. The connecting-rod is jointed to the bucket, and the piston is also fastened to the same detail; thus working the air-pump direct at the same speed as the piston, and without complicating the apparatus.

IMAGE ON THE RETINA OF A DEAD EYE.—Much nonsense has been published respecting the last image presented on the eye of a deceased person being retained in the retina. They are not chemical or photographic pictures; hence when the original image is removed there can be no picture seen on the retina.

THE coinage at the United States Mint, Philadelphia, for the month of October, amounted to $387,375 96—mostly in double eagles. The silver coinage in dollars and half dollars, was $28,000. 42,000,000 cents were coined during the month.

IN San Francisco they buy $10,000 in greenbacks with $7,500 in gold. With the greenbacks they buy $10,000 worth of goods in New York, ship them, and sell them in San Francisco for 15,000 in gold. Sure thing.

ELASTICITY IN RAILWAY WHEELS.—In the paper read by Mr. Thomas Spencer, at the last meeting of the British Association, upon the manufacture of steel in the northeastern districts, he mentioned, as a matter of note, that one firm had commenced making circular springs, under Mr. William Bridges Adams's patent, to be employed between the tires and fellies of the wheels of every kind of railway rolling stock. "It is stated," said Mr. Spencer, "that springs applied in this manner effect an increased durability in Staffordshire tires of 50 per cent. over Krüpp's cast steel tires without the springs." We have, in corroboration of this statement, a report from the St. Helen's Railway, a mineral line in Lancashire, that Staffordshire tires set on hoop springs, have run 63,913 miles under heavy engines, and that even then, when the engine was in to be overhauled the tires did not require to be turned anew.—*Engineer.*

WELDED BOILERS.—Instead of riveting the plates of steam boilers, efforts are now being made to weld the plates, thus to produce boilers free from joints. The method of effecting this is to heat the edges of the plates to a welding heat with gas flame, and hammer them together. A small cornish boiler has been finished by this method. In forming the deck beams of the iron frigate *Warrior*, the webs of two T-irons were joined together by a bar of H section called a glut, which, with the edges to be welded, was raised to a welding heat by jets of gas flame; the whole was then welded together, uniting the angle irons and deck beams into solid forgings, instead of bolting or riveting them together. In the building of iron vessels this system deserves universal attention.

GOLD EXPORTS.—Very large quantities of gold are being exported from England and France, as well as from the United States; and the banks of these two countries have raised the rate of discount to 7 per cent, in order to arrest the drain from their vaults. On the 20th October there was £1,500,000 less bullion in the Bank of England than at the same period of the previous year. The gold is being shipped to India, China, and South America, where metallic money is the only currency that will circulate in trading operations. India is said to be a great whirlpool for gold and silver. The natives hoard up these metals and they become lost in a great measure as a circulating medium of exchange to other parts of the world.

BRITISH COTTON TRADE.—From "The Board of Trade Returns," we learn that the value of cotton imported into England for the first nine months of 1862 was £11,664,699; for the same number of months this year, £26,861,993. The increase in quantity was 367,381,600 pounds, against 254,196,900 pounds in 1862. There has been a steady increase in the supply of cotton, considerable quantities coming from countries which previously had never furnished any. In Queensland, where the climate is similar to that of the Gulf States, as fine sea island qualities have been raised as in South Carolina. High prices have stimulated production. The cotton factories are gradually going into full time, and about two-thirds of the operatives who were unemployed in 1862 are now at work again.

ANOTHER FRENCH BALLOON.—Louis Godard, one of the aeronauts who made the ascent and perilous descent with Nadar, has obtained an authorization for the use of a portion of the "Palais d'Industrie," for the construction of an immense balloon, to be called the "Colosse." Nadar's "Giant" held six thousand cubic metres of gas; but the "Colosse" is to contain fourteen thousand. It is to be filled with rarified air, instead of gas, and is intended to take up fifty passengers. The "Giant" in her late trip traversed three hundred and seventy leagues in sixteen hours, at the average rate of fifty-six miles an hour.

THE monitors have been docked at Port Royal and had their bottoms relieved of the long weeds and barnacles which had accumulated to such an extent as to greatly impede their progress. After the obstructions were removed the *Passaic* made a trial trip and attained a speed of seven miles per hour.

THE Peninsular and Oriental Steamship Company have applied steam jackets and surface condensers to the engines of a number of their steamers.

BLOCKADE-RUNNERS are rapidly coming to grief, if we may believe the correspondence which has been intercepted of late between the rebel agents in England and traders there who have been conniving at, and concerned in breaches of international law by running cargoes into Southern ports. These virtuous *neutral* shippers want heavy securities from Southern agents before they will venture to run rich cargoes into blockaded ports, and it is a gratifying fact to every loyal heart that many of these traders have been financially ruined. If piratical *Alabama's* and *Florida's* have succeeded in destroying the commerce of loyal citizens, it is agreeable to know that thousands of tuns of shipping have been captured by our vigilant blockaders, and gratifying to find that those who most vehemently denounced the blockade as a paper one, have suffered most in testing its strength.

FRENCH WORKMEN'S COTTAGES.—A Count de Madre, in Paris, has built twenty-five great houses for workmen, and let them in flats, consisting of sitting-room, bedroom, and kitchen, at a rent of three shillings a week. All the tenants have the use of a court-yard as playground, and a grand central hall is to be erected for the use of the workmen's wives. The count pledges himself never to increase the rent of a tenant, so that he may decorate in confidence; never to eject one except for non-payment of rent, and never to distrain on furniture. The experiment has now been tried for two years, and the result is a profit of six and a half per cent. The count is about to erect other large buildings on the same plan.

TWO BLOCKADE RUNNERS FROM THE CLYDE.—Two very fast and magnificent looking paddle-wheel steamers have left the Clyde for the West Indies, in order to be employed as blockade-breakers—namely, the *City of Petersburgh*, seven hundred tuns, with engines of two hundred and fifty horse power; and the *Presto*, one hundred and sixty-four tuns, lately the *Fergus*. These vessels will, we trust, soon be captured and added to the Union fleet.

THE Government is taking stringent measures against shoddy contractors. One of these swindlers has just been convicted of furnishing peas for coffee, and has been sentenced to 5 years imprisonment; another, a horse contractor, convicted of defrauding the Government, has been fined $10,000 and sentenced to six month's imprisonment.

A RAILROAD train in France was lately saved from plunging into an open drain by the devotion of a peasant; he laid down upon the rails, and thus arresting the attention of the engineer, caused the stoppage of the train.

A STEAM spading machine has been invented in Providence, which, it is claimed, will do the work of fifteen yoke of cattle. It consumes one fourth of a cord of wood per day.

THE Popular Science Review for October prints a page of the London *Times* in a space of 4½ by 5⅝ inches, from stone by photolithography. The type is perfectly legible.

THE annual revenue of Russia is $231,871,240, of which $90,000,000 is obtained from the tax on brandy.

HYDRAULIC forging presses are coming into use to some extent in England, as a substitute for steam hammers.

THE latest remedy for sea-sickness is ice. We imagine a better one is not to go to sea.

Cheap Musical Entertainment.

Almost every person enjoys good music, but in the country it is a luxury that is not always attainable by those who most appreciate it. A good music box affords a great deal of entertainment to persons of musical taste, and is a very attractive feature in the parlor or dining-room, especially among the younger members of a household. If any of our readers wish to render their loved ones at home very happy, we advise them to procure a music box, even if they cannot afford one that plays more than two tunes; the larger the box the more tunes it will play and the greater will be the pleasure derived from it. Persons wishing to try our suggestion for producing happiness in the family circle, will find M. J. Paillard's card in our advertising columns, offering to supply the world with music boxes of his own importation.

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MANUFACTURE OF BEER.

Great attention is paid in Europe to the selection of the grain to be subjected to the first process in brewing, which is the malting. The most profitable barley is the rath, which is the earliest ripe. The grain must be full, round, heavy and sweet, and of uniform quality, not a mixture of old and new; it should have sweated and seasoned in the stack. Other grains when used instead of barley should be selected with similar care. Any grains are suitable that contain a large proportion of starch. This is converted, as the seeds begin to germinate, into a fermentable sugar that resembles cane sugar; first passing through the stage in which the substance is called dextrine, and from this, by the action of diastase, which is generated in the chemical change, it becomes sugar. Malted barley yields only about 1 part in 500 of diastase, but this is sufficient to saccharify 2,000 parts of dry starch. This action of diastase takes place only below the boiling point of water; from 158° to 167° Fah., is found the most favorable temperature. By the fermentation of the sugar the alcoholic portion of the beer is obtained. Thus it is explained why those grains which contain the largest quantity of starch are best adapted to the manufacture of beer. Malting is this germinating process, in which the starch is converted into sugar. The grain is first subjected to the operation called steeping. This is effected in large cisterns, in which the grain is covered with water, 6 or 7 inches above its surface. Forty hours is the usual period of this operation. If the water in this time shows any symptoms of fermentation, it must be drawn off, and released with fresh cold water. It is completed when the grain has absorbed so much water that it is fully swollen, and is easily perforated with a needle. The gain in weight is often 47 pounds to the cwt. of barley. The liquor is now drawn off, and the grain is left to drain for six hours. The next operation of the malting process is that termed couching. The grain is thrown upon a malt floor, in rectangular heaps of 12 to 16 inches in depth, called couches. In this condition it is quite dry, but in the course of a day it begins to grow moist and acquires a temperature 10° higher than that of the surrounding air. It gives out a pleasant fruity smell, and germination begins by the shooting out of the fibrils of the young roots from the tip of every grain. This takes place about ninety-six hours after the removal of the grain from the steep. The rudiments of the future stem, called by the maltsters acrospire, begin to appear about a day after the germination of the rootlets. The germination must now be checked and the couching be succeeded by the flooring operation, which is merely spreading the grain more thinly upon the floor, and turning it over with spades two or three times a day. The depth of the layer diminishes each time, till it is at last reduced to only 3 or 4 inches. Care is taken that the temperature shall not much exceed 62°. By the absorption of oxygen, and the emission of carbonic acid, the tendency is to an increase of heat considerably beyond this point. The acrospire or stem shoot creeps along under the husk of the grain from the end at which it appeared toward the other, from which it would burst forth in the form of a leaf, if the process were not stopped; but when the shoot has reached this end, and the gluten and mucilage has mostly disappeared from the grain, and this has become white and crumbly like meal, the flooring process is terminated, and the malt is now subjected to the last process, which is kiln drying. The couching and flooring occupy a period of two weeks in England, but in Scotland, where the temperature is lower, three weeks are sometimes required. The grain is converted from starch into sugar as the acrospire moves along under its surface. One end is thus at one time mostly starch, and the other mostly sugar. If the vegetation were allowed to go on till the stem shoots forth, the grain would soon be exhausted of its saccharine properties. In the drying, the malt is spread in a layer upon the floor of the kiln from 3 to 10 inches deep, and kept at a temperature, till the moisture is mostly expelled, of about 90°, which is afterward increased to 140° or more. The malt should be frequently stirred up with spades during this process, which should last in all about two days. The malt has now acquired a pale amber or brown color, and is freed from the roots and acrospires, which have become brittle, and being broken off in the stirring are separated by sifting. The grains are round, of a sweetish taste and agreeable smell, and are full of soft flour. The bulk is greater than that of the original barley, but the water gained in the steeping is all expelled, and a loss of weight is incurred, amounting to from 12 to 20 per cent, by waste and cleaning. The variety of color is due to the greater or less degree of heat employed in the drying. These distinctions of color continue through the brewing into the liquors produced, giving to them those peculiar properties which cause them to be distinguished as ale, beer and porter. Ale is made from the palest malt; porter from the brownest, which is partially charred and acquires a bitter taste. The same effect is produced by mixing with the strong liquor made of pale malt, the darkest-colored malts, or of using these together in mixtures called grists, while the agreeable taste is imitated by introducing quassia, cocculus indicus, or other bitter substances of similar character. This process of adulteration, however, is strictly forbidden in Great Britain., under heavy penalties, by acts of Parliament. The liquor produced by mixing the different sorts of ale was found to be very strengthening, and became popular with the laboring classes, particularly the porters; hence its name. The brewing process proper, like the malting, consists of several different operations. The first is the grinding or crushing of the malt to a coarse powder. This is best done between rollers of case-hardened iron. The mashing process succeeds this. The crushed malt is shaken into large mash-tubs, containing water at a temperature of 160°. In these it is thoroughly stirred up, with no more water than is sufficient to completely soak the malt. By this operation the sugar is partially dissolved, and what starch there may be unchanged is again subjected to the action of the diastase. After reposing a half hour, more water is introduced at a temperature of 194°, raising the whole to a temperature of about 167°. After remaining two or three hours, the sweet wort is drawn off into a lower vessel called an underback. Great care is required in running off the infusion, that it shall be clear, and free from any mixtures of finely-divided grain. Its color should be the same as that of the malt employed. It is a solution of the saccharine matters principally, the mucilaginous and resinous not being yet dissolved. Water is again added to the mash-tub at a temperature of 194°, which is immediately reduced by the cool malt to 167°. This is drawn off and mixed with the first. The product of the third solution with water at the boiling temperature is not mixed with the other infusions, but is sometimes employed for wetting new malt, or it is used for making small beer. Great care must be used in introducing the water into the mash-tub at the proper temperature, and it is very questionable whether the high temperature of 194° at which the water of the second mashing is introduced, is not attended with the injurious effect of rendering the starch, albumen and gluten with which it first comes in contact insoluble; though this temperature is immediately reduced, as already mentioned. Even the temperature of the surrounding atmosphere materially influences the result of the operation. Ingenious machines have been contrived to serve the double purpose of masher and attemperator. Descriptions of these, with full details of the manufacture, are given by Dr. Muspratt, in his work on chemistry; Dr. Ure also treats the subject very fully. The strength of the worts, or the proportion of saccharine matter they contain must be accurately ascertained, that an article of uniform quality may be obtained. This is done by the use of a variety of hydrometer, which is called a saccharometer. By means of this, different worts are mixed in the proper proportions to produce the desired strength. The next process is boiling. This is done in large copper vessels, furnished with steam valves, which are contrived to retain the steam at a temperature somewhat higher than 212°. In this process the hops are introduced, and the boiling of the mixture is continued with frequent stirring, effected by means of a rod passing through a stuffing box at the top of the vessel, and carrying at the lower end a horizontal bar, the whole being moved around by machinery. By the boiling the liquor is concentrated, the albumen or mucilage is coagulated and the glutinous matter is rendered insoluble by combining with the tannin of the hops. The proper use of the hops depends upon a thorough knowledge of the peculiar qualities of the beer, and its relations to the season, the time it is to be kept and the climate for which it is designed. The exact qualities of the hops, also, should be well understood. More hops are required in warm than in cold weather, and different varieties of hops are selected for different varieties of beer. A general rule in England for the stronger kinds of ale and porter is to allow 1 pound of hops for every bushel of malt, but for common beer not more than quarter this quantity of hops is often allowed. In consequence of the boiling causing the loss of a portion of the aromatic constituents of the hops, different expedients have been resorted to for collecting and condensing these as they escape with the steam, or for substituting for the hops an extract prepared from them. This portion of the process is probably still susceptible of great improvements. The next process is straining of the worts. This is done by passing them through a cistern called a hop-back, which has a metallic bottom full of small holes. The next process is the cooling. This must be accomplished as rapidly as possible, to prevent acetification. Various expedients have been adopted for hastening the cooling. The old method is to expose the wort in broad shallow cisterns, over which currents of air are made to play. These are usually placed under the roof of the brewery, the rooms being ventilated by Venetian blinds, which form the sides of the apartments. Another method is to pass cold water through pipes which are laid in divisions of the cisterns which hold the wort. The liquor, now called gyle, is brought to the temperature of 56° to 64°, and is then passed into the fermenting tubs, or gyle-tuns, as they are termed. These are huge wooden vats, strongly hooped and close, with the exception of a hole through which the process may be inspected. Yeast is now added, sometimes previously mixed with a quantity of the wort in which fermentation has already commenced. One gallon of yeast is usually sufficient to set 100 gallons of wort into fermentation. In cold weather more is required than in warm. No portion of the work requires more care than the introduction of the proper quality and quantity of yeast, and the management of the process to which it gives rise. The temperature is liable to sudden increase, and the fermentation to go on at too rapid a rate, or to proceed too sluggishly, leading to a putrefactive decomposition. By the color of the froth or barm the state of the operation is indicated, and this is regulated by its removal at the proper time and in proper quantity, and by suitable control of the temperature. The fermenting is continued in England from twenty-four to thirty-six hours, and in Scotland, at a slower rate, from six to twelve days, which renders the further fermentation in casks unnecessary. The head of froth is finally beaten down and mixed with the wort before all the sugar is converted into alcohol; and in order to anticipate the acetous fermentation, which would soon ensue, as also to retain the alcohol, the aroma of the hop and the carbonic acid in solution, the beer is drawn off into large casks or "rounds," in which it is further fermented and cleansed. The frothy matters, consisting of the particles of yeast puffed out by the carbonic acid which is liberated and mixed with them, slowly flow over by the bung hole, and the casks are kept full by adding fresh supplies of ale. Isinglass, dissolved in sour beer, is sometimes added to hasten this cleansing process. It fines the liquor, by forming at the surface a scum or web, which, as it slowly sinks to the bottom, carries with it the different floating impurities. In this final "attenuation" all muddiness is removed from the liquor, which becomes clear and transparent, and, if skilfully managed, with some saccharine matter left not converted into alcohol, and yet not so much of this as to give to the liquor a mawkish sweet taste. From the cleansing casks the liquor is transferred to the great store vats, or to the barrels in which it goes to the consumer. Pale India or Burton ale undergoes a long-continued and slow fermentation, particular care being taken that the temperature does not exceed 65°. The best malt and hops are selected, and more than twice as much of the latter is used as in the manufacture of the other kinds of beer, and is

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better adapted for use in hot climates. Scotch ale is more heady and less wholesome than the other ales. Mr. Roberts found, in examining seventy-one samples, an average of 14·59 per cent of proof spirit. Until a taste had been developed for mild fresh ales, it was the practice to keep an enormous stock on hand from eighteen months to two years in the store vats of the great English breweries. One vat at Whitehead's was said to contain no less than 20,000 barrels of the capacity of 36 gallons each. By bursting such a vat at Meux's brewery some years since, several houses with their inhabitants were swept into the river. Bavarian beer has been highly recommended by Liebig as less liable to become sour than the French and English beers. Dr. Ure, after a personal examination of them while traveling in Germany, does not confirm the views expressed by Liebig—*New American Cyclopœdia.*

ANESTHESIA AND NITROUS OXIDE GAS.

At a late meeting of the Odontographic Society of Pennsylvania, an essay was read on anesthesia, by Dr. Ambler Tees, which has been published in *The Dental Cosmos.* A history of the art of producing insensibility to pain, for the purpose of undergoing surgical operations, is given, and Dr. Tees stated that he had seen a book which was published in London about two hundred years ago, which contained a comic illustration of the subject. The credit is justly given, however, to Dr. Horace Wells, of Hartford, Conn., for establishing anesthesia connected with surgery, by the use of both nitrous oxide gas, and sulphuric ether in 1844.

In 1846, Dr. Morton, of Boston, introduced ethereal inhalation in that city, calling it letheon, and he soon gained for it great notoriety. In giving ether to a patient the vapor should be mixed with air, and for this purpose it should be inhaled through a sponge and applied over the nostrils; the fingers being kept on the pulse during the act of inhalation, and in case of it becoming feeble, the sponge containing the ether should be removed until the circulation becomes more free. The dose is about two fluid ounces and it produces its effects in from two to five minutes. It is made by distilling a mixture of sulphuric acid and alcohol, and is preferred to chloroform on account of the danger connected with the use of the latter. Chloroform is made by distilling a solution of the chloride of lime and alcohol. It was discovered by Mr. Samuel Guthrie, of Sackett's Harbor, N. Y., 1831, and applied to produce anesthesia by Dr. Simpson of Edinburgh, in 1847. The dose is a fluid drachm, but it should not be administered to persons subject to epilepsy. It produces insensibility by inhalation, in about two minutes.

Anesthesia by electro-magnetism was produced by Dr. Frances of Philadelphia, a few years ago. In extracting a tooth by this mode the forceps are attached to the positive wire of a battery, the patient's hand clasps the negative, and a current of electricity is established as soon as the forceps touches the tooth, when the latter may be extracted without pain. A local anesthetic agent, consisting of a freezing mixture of ice and salt, was successfully used by Dr. Branch of Illinois, in 1855. This mixture is applied to the gum of a decayed tooth in a piece of bladder and held until the gum becomes white, when the tooth may be extracted without pain. Chloroform and ether are most convenient agents for producing anesthesia, and Drs. Flagg and McQuillen stated at the conclusion of Dr. Ambler's paper, that if the death of any human being had ever occurred by ether, it must have been owing to the most gross carelessness on the part of the operator in administering it.

Professor Morton, who was present, at the request of Dr. Flagg, gave a description of the process for making nitrous oxide gas, by the following five different modes :—

1st. By decomposing nitric oxide by the long-continued action of iron filings, or other absorbent of oxygen.

2d. By the action of dilute nitric acid upon zinc or tin.

3d. When nitrosulphate of ammonia is thrown into an acid.

4th. By dissolving protochloride of tin in hydrochloric acid; heating the solution in a retort over the water-bath, and dropping in crystals of niter through a tube dipping into the liquid.

5th. By heating the nitrate of ammonia in a flask or retort until a gentle ebullition takes place in the fused salt, and keeping up this action until the material is nearly exhausted.

The gas is obtained in a pure state only by the last two methods; the last of all, on account of economy, ease of manipulation, &c., being the one practically employed. The decomposition here is as follows :—$NH_4O,NO_5=4HO,+2NO$. Water and nitrous oxide being the only products, the flask would be left empty if the operation were continued long enough, which a prudent regard for the safety of our glass flask alone forbids.

Where the salt used is somewhat dry, a little difficulty often arises from frothing at the beginning of the operation; the addition of a few drops of water, or very careful regulation of the heat at the outset, will avoid the inconvenience, which is not permanent, as the generation of water during the decomposition soon so thins the fused salt that frothing cannot be induced. The heat during the process should be well regulated, as too high a temperature may cause the development of nitric oxide, which would be very injurious, if inhaled, or even of pure nitrogen, which would be of course, a diluent, diminishing the efficiency of the gas. The nitric oxide might be removed by passing the gas as generated through a washing bottle, containing a solution of protosulphate of iron, which would absorb the impurity, but not the required product. The absorption of this gas by water ($\frac{3}{4}$ vols. being so taken up) makes the ordinary pneumatic cistern an objectionable means of collecting it; yet it should come in contact with some water to remove such impurities as a trace of nitric acid, which may sometimes occur, and have some opportunity of depositing the water which accompanies it as steam in its exit from the flask or retort. These ends would be best subserved, on the large scale, by the use of a copper gas-holder as a reservoir, and an india-rubber bag of two or three gallons capacity as an inhaler.

The Wonders of the Port of London.

The custom-house port of London extends from London bridge to the North Foreland, on the Kent coast, and the Naze, on the Essex coast, including not only the Thames, but the wide estuary below the river. This mighty port has grown up gradually.

There were no docks in London until this century, which has witnessed the expenditure of twelve millions sterling in the construction of docks on either side of the Thames. Six thousand ships now enter these docks annually, and the cry is "still they come!" All the docks are filled, though some do not pay well.

There are shipped off now yearly from the port of London alone commodities to the value of thirty millions sterling, beside those from other ports of the United Kingdom, and there is imported a still larger quantity of colonial produce. The ships which actually belong to the port of London are not less than 3,000 in number, averaging about 300 tuns each, or 900,000 tuns of commercial shipping in all—a stupendous quantity to enter and depart from one single river. It is a quarter of the total amount for the whole kingdom. Five hundred of these are steamers, and one half of all the mercantile steam navy of England belongs to and is registered in the port of London. No less than 30,000 ships enter the port of London yearly—more than 80 per day! Some of these ships make many voyages, but there are 30,000 arrivals with 30,000 cargoes. The vessels average 200 tuns each, giving us an aggregate of 6,000,000 tuns.

The coasting trade of London is most wonderful. Of the 30,000 vessels just named, 18,000 bring cargoes from other British ports, and 9,000 of these go back empty, mostly to coal ports. Five million tuns of coal are burned annually in the metropolis, and about 12,000 cargoes of coal are brought into the Thames annually—one every hour, and a handsome surplus over. The spread of railways from London has had very little effect in diminishing trade by other modes of conveyance. The canal boats carry more than before railways were constructed, and the number of carriages and horses employed in Great Britain, the use of which railways were designed to supercede, is greater than it was before these railways were made. But the grandeur of the foreign trade of London strikes the imagination still more forcibly. All the corners of the earth seem to be brought to a focus in the river Thames : 12,000 ships now enter there yearly, bringing nearly 12,000 cargoes of all that the earth can produce of value and beauty. Every forty minutes during the year a ship passes Gravesend, bringing stores from some colonial clime, in many cases much more than London's own proportion. For instance, seven-eighths of all the coffee brought to all parts of the United Kingdom ; seven ninths of all the live stock ; one-half of the sugar, tobacco, wool, fruit, rice, hides and skins ; nearly one-half of the bacon, ham, barreled salt meat, butter, cheese, eggs and lard ; five-sixths of all the spices, and no less than fifteen-sixteenths of all the tea. London consumes just as much of all this as she wants, and sends the rest into the provinces and abroad.

It is truly wonderful where all the commodities go to : 10,000 pounds of pepper every year—the sound of the words makes one sneeze !—24,000,000 bushels of corn, 1,000,000 hundred-weights of flour and meal, and more than 1,000,000 of oil cake entered the Thames alone in one recent year. Two ships every day, or thereabouts, of the average capacity of 700 tuns, enter the Thames from India and China alone. The export trade is enormous. No less than ten or eleven millions sterling are in the forms of clothing and materials for clothing ; £1,000,000 in boots and shoes, £1,000,000 in "millinery and haberdashery," £1,000,000 for apparel and slops, all go from one port in one year ! Some of the items of imports are curious. Think of whole ship-loads of Dutch eels, in cargoes of 20,000 pounds each, coming to London ; oxen fattened for the London market in Schleswig Holstein ; Ostend butter and Ostend rabbits, which are sure to find a market in spite of the home supply.

Two million empty oyster shells were once brought over to London in one ship for the sake of that beautiful lining which constitutes the mother-of-pearl used for many fancy and ornamental purposes. One fact most instructive is observable in this vast trade of the port of London, viz.. whatever is brought over, in whatever shape, from whatever place and by whatever persons, it is sure to find a market. The price may be beaten down, if the demand is languid, but they never think of saying "We don't want any."

Notwithstanding the vast commercial importance of London, the great American trade is mostly within the grasp of Liverpool, because the Mersey is nearer to America than the Thames, and cotton is most needed in Lancashire, and because the chief articles sold to America—such as metals, hardware, earthenware, &c.—are fabricated nearer to Liverpool than to London. In the trade with Australia, too, Liverpool beats London, as measured by the relative population of the two places.—*Chambers' Journal.*

The Origin of Familiar Phrases.

The term "masterly inactivity" originated with Sir James Mackintosh. "God tempers the wind to the shorn lamb," which everyone who did not suppose it was in the Bible, credited to Sterne, was stolen by him from George Herbert, who translated it from the French of Henry Estienne. "The cup that cheers but not inebriates," was conveyed by Cowper from Bishop Berkeley, in his *Siris.* Wordsworth's "The child is father to the man," is traced from him to Milton, and from Milton to Sir Thomas More. "Like angel visits—few and far between," is the offspring of Hook ; it is not Thomas Campbell's original thought. Old John Norris (1658) originated it ("Like angel visits, short and bright"), and after him, Robert Blair, as late as 1745. "There's a gude time coming," is Scott's phrase in *Rob Roy*, and the "almighty dollar" is Washington Irving's happy thought.

THE turnip taste which is sometimes noticed in milk, can be effectually removed by common salt-peter. An ounce of it should be put into a pint bottle and the same filled with boiling water. A teaspoonful of the solution is enough for an ordinary-sized milk pail. The better way to cure the evil, however, is not to feed so many turnips to cows.

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Correspondence

How May an Inventor Lose His Right to a Patent?

[For the Scientific American.

This is a question of great practical importance to the inventors of the country, and one upon which every solicitor of patents ought to be enlightened.

Judge Dunlop, late of the Circuit Court of the District of Columbia, in the exercise of the jurisdiction which was conferred by statute upon the several judges of that court, to review, on appeal, the decisions of the Commissioners of Patents, has, in a series of decisions, laid down a proposition which, if good law, would invalidate many valuable patents. That proposition is, that an inventor, by simply delaying to apply for a patent for more than two years after the discovery of an invention, thereby abandons such an invention to the public, and forfeits all right to a patent therefor. This proposition is distinctly and emphatically laid down by the learned judge in several cases, and especially so in the case of Snowdon *vs.* Pierce, decided about two years ago. Since the publication of "Law's Digest," in which these *dicta* of Judge Dunlop are quoted, it is believed that many persons interested, as inventors or solicitors, in procuring patents, have been led to attach to them the weight of judicial authority, and to accept the proposition which they lay down as sound law.

It ought to be known, however, that the proposition of Judge Dunlop, on this subject, is neither sustained by the courts nor followed by the Patent Office.

The Examiners-in Chief of the Patent Office, since the institution of that Board, have had frequent occasion to review the authorities upon this question, and in so doing have, in several decisions, clearly demonstrated that the position laid down by the learned judge, as above stated, is wholly untenable; being unwarranted by the statutes and in conflict with the whole current of judicial decisions on the subject. They hold that the first inventor of a patentable invention can only lose his right to a patent in one of three ways, to wit: 1st. By an express abandonment of the invention to the public, or by acts or omissions from which an intention so to abandon it may be fairly presumed. 2d. By permitting the invention to go into "public use" or "on sale" for the period of two years before applying for a patent. 3d. By neglecting to reduce his inventionto practice, or to "perfect and adapt" it, until a subsequent independent inventor shall have discovered the same invention, and by superior diligence anticipated him in reducing to practice, or in applying for a patent therefor.

During the current year a judicial decision has been rendered by high authority, in which the doctrine that an inventor will forfeit his right to a patent by mere delay of more than two years in filing an application for one, has been emphatically repudiated. I refer to the case of Obed Hussey's administratrix *vs.* Bradley & Bradley, decided in the Circuit Court for the Northern District of New York, in March last, by Justices Nelson of the Supreme Court, and Hall of the District Court.

This was a bill in Chancery for an injunction, and an account, for the infringement of certain re-issued patents for improvements in harvesting machines, based upon an original patent issued to Obed Hussey, the 7th of August, 1844, on an application filed the 17th of February, 1844. As to one of said re-issued patents (No. 449), the evidence (as recited by the court in the decision) established the fact that Hussey had explained the invention embraced in it to one Lovegrove, in August, 1844, "and that, in October or November [1844] Hussey showed him a machine in which these improvements were embodied." It also appeared from the evidence, as recited by the court, that said machine, fully embodying the invention covered by the patent, was then (in October or November, 1844,) "completed, with the exception of a tongue or shaft," and "was then in Hussey's factory, with other machines which he was selling." It was insisted, on the part of the defendants, that these facts invalidated the patent, and rendered it void. It certainly would be difficult to conceive of a clearer case of a void patent, if the doctrine of Judge Dunlop, above referred to, were good law. Hussey had his invention fully embodied in a machine made for the market, and exposed in his factory "with other machines which he was selling," at least two years and three months previous to his taking the first steps toward obtaining a patent, by filing an application therefor. Yet the court decided that, inasmuch as there was no evidence that this particular machine had been actually offered for sale or sold, previous to the harvest of 1855, or had been ever used until during the harvest of that year, the evidence failed to invalidate the patent; and it was sustained, and a decree was rendered thereon against the defendants, for an injunction and an account.

This decision has as yet been published in pamphlet form only.

STURE DECICIS.

"Abuse of Exhilarating Gas in Surgery."

MESSRS EDITORS:—The above heads an article in the SCIENTIFIC AMERICAN, page 294 current volume, to which a learned "Professor," after citing authorities against the use of this gas as an anesthetic, modestly signs his name. That plants and animals do not find in this gas their natural aliment is no argument against the temporary use of this as an anesthetic, in dental surgery at least. Pure oxygen will sustain animal life for only a limited period, and yet its beneficial effects for affording relief and help in sundry cases is never doubted.

The humanizing and safe results of employing nitrous oxide in dental surgery have been too thoroughly tested to be swept away by any flourish of the pen. Like every useful agent in mitigating human suffering, it has been, and still is, subject to many abuses in the manner of its use by some whose cupidity and ignorance prey upon their unfortunate victims. A reliable friend of the dental profession recently stated to us that of 1300 cases of extracting teeth by the use of nitrous oxide, in not a single instance had pain been inflicted or any injurious results followed to those inhaling it. Others testify to similar success.

Cupidity has called into the field a host of ignorant and unskilled practitioners with this anesthetic; while the demand for the material from which to prepare the gas has thrown into the market a variety of trashy salts of the nitrate of ammonia, yielding in their decomposition volatile acids and chlorine, fatal to health and success.

The manner of inhaling the gas, even when properly prepared, has been a source of many failures. The breathing of the patient should be perfectly free, through an aperture in the stop-cock of not less than three-eighths or half an inch diameter. With pure nitrate ammonia and a suitable apparatus for decomposing and washing the gas from this, a suitable breathing apparatus, and skill in operating while the patient is insensible, I am confident, from personal experience, that no better agent has yet been discovered for producing anesthesia.

A. W. SPRAGUE, chemist, Boston.

Evaporation.

MESSRS. EDITORS:—The changes which matter undergoes are either physical or chemical. The laws in accordance with which these changes take place afford an exhaustless source of study, both for the physicist and the chemist. One of the most common phenomena in nature is evaporation—the process by which the waters of the earth and ocean are carried up into the atmosphere, there to be condensed into clouds and held in readiness to descend to the earth again in the form of rain. This is truly a wonderful phenomenon. According to the results of some experiments, made to ascertain the quantity of water which is evaporated into the air, it was found that one thousand six hundred gallons of water would be raised from one acre of ground in twenty-four hours. This experiment wasmade when there had been no rain for upwards of a month. Other experiments made when the earth was drenched with rain and was heated to 180° Fah., gave a result of two thousand eight hundred gallons from an acre of ground in twelve hours. From these experiments it has been estimated that in one year there are thirty-six inches of water raised from the surface of all the waters, and at least, thirty inches from the surface of the land. It would follow from this that there are one hundred thousand cubic miles of water carried up into the air in one year.

This invisible process is continually going on, but with much greater rapidity during the warm season of the year; as the capacity of air for holding moisture depends upon its temperature. It is also greater during the day than during the night, or, other things being equal, it increases with the ascent of the sun. Air at the freezing point is capable of holding the 160th part of its own weight of water; at the temperature of 59° Fah., the 80th part; at 86° Fah., the 40th part, and at 140° Fah., the 10th part. When the atmosphere is saturated with moisture, if the temperature is reduced and the moisture is condensed into visible clouds, the water is pressed out and falls in the form of rain. We cannot overestimate this law of evaporation; without it we could have no rain; the water would become stagnant and corrupt. The earth with all its beautiful scenery and luxuriant vegetation, would be converted into a dreary wilderness. P. H. DOWLING.

Tecumseh, Mich.

A Better Ambulance Wanted.

MESSRS. EDITORS:—While many of the inventive minds of our country are devoted to the production of the most effective and destructive weapons, in the shape of ordnance, small arms, shot and shell, penetrable projectiles and impenetrable ships, others are endeavoring to render the hard and monotonous life of our soldiers as comfortable and pleasant as possible, by furnishing them with a multiplicity of ingenious articles adapted to these purposes. Thus all are exhibiting a desire to add something to the one grand object in view, of restoring unity of States and submission to the laws. In this way those who, for various good reasons, remain at home, contribute their mite in a great many ways.

My object in addressing you is to call the attention of inventors to the fact, that we have not a single ambulance in our army which is deemed suitable for the transportation of the sick and wounded men. My attention was called to this fact a few days since by a surgeon inspector, who had been sent to examine a small model of an ambulance exhibited in the Patent Office. It was evident from an examination of this model that no information of any practical value could be obtained, and the surgeon's report was I suppose adverse. He remarked to me that very many deaths occur in consequence of the manner in which our suffering wounded are hauled from the field in the carts at present in use, and that there is a necessity for a good ambulance for conveying the wounded man to a place where he can receive surgical assistance. I can find but two patents granted for ambulances and neither of these are suit able for army use. I am sure that a really good ambulance would be accepted immediately by our Government, which has shown the greatest liberality to all its soldiers in supplying them with comforts unknown to any European army, and I trust that our inventors will turn their minds in this channel and supply the want. It will not only be a philanthropic but a remunerative enterprise to the inventor who produces the acceptable ambulance, and he will ever afterward have the happy satisfaction of knowing that he contributed some relief to a wounded, or perhaps a dying patient.

R. T. CAMPBELL.

Washington, Nov. 18, 1863.

Bees Easily Managed.

MESSRS. EDITORS:—The mass of beekeepers do not yet seem to understand that bees are rendered perfectly subservient to their master's will. They can be rendered as harmless as so many flies. An application of the axiom "Bees when gorged with liquid sweets never volunteer an attack," is all that is needed in order to handle them with perfect impunity, even to tearing their hive all to fragments by piecemeal.

HOW TO DO IT.—When the bees have plenty of stores, close the hive so that no bee can escape. Rap smartly on the hive a few times. After two or three minutes repeat the operation. In the course of ten or fifteen minutes the bees will have filled themselves with honey. You can then open the hive and per-

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form any operation you wish without danger of being stung. If you have a bar or frame hive, remove the top quietly, and sprinkle the bees with water made quite sweet with sugar. After allowing them time to fill themselves, you can proceed to remove the frames or perform any manipulations necessary. But the easiest way to manage them is to quietly puff a little smoke into the hive (that from tobacco is the best) and they are at once rendered perfectly tame and agreeable. The easiest way is to have a pipe made on purpose to blow through, instead of by "suction" as in the common smoking. By means of this pipe, any one, though not a smoker, can subject his bees to the soothing effects of tobacco smoke, and deprive them of all disposition to sting. Combs can be removed, worms destroyed, artificial swarms made, surplus honey removed, and all operations performed without the operator having on any "bee hat" or other protection to guard against their sting. If no bees are injured by squeezing or otherwise, no resentment will be shown. Do not use too much smoke, as it will stupefy the bees. Bees seem to forget all about what you may do when they are under the influence of smoke, and will manifest no anger when afterwards approached, as they would do if you operated upon them without first subjecting them to this taming process. L.

Fermentation a Cause of Various Diseases---Antidotes.

A treatise has been published by M. Polli, of Milan, on fermentation as the cause of various diseases. He states that there exists a great analogy between the processes of fermentation and many organic metamorphoses which occur in some diseases; and he has made experiments by injecting substances into the blood-vessels of animals, which have acted as ferments and have produced a state of action resembling natural diseases. By injecting purulent putrid matter into the veins of animals, diseases presenting all the characteristics of typhoid fever were produced. Contagious diseases, such as glanders, which is produced by the injection of glanderous humors, are facts which prove that a general affection may be induced by the simple introduction into the blood of a substance capable of acting as a ferment.

M. Polli also believes that he has proved, by a series of experiments, that it is possible to neutralize morbific ferments in the blood of animals by chemical substances which do not act in a manner incompatible with life; and it is by these substances that he hopes to treat successfully those diseases of which fermentation is the primary cause.

It is well known that sulphurous acid gas prevents alcoholic and acetic fermentation, and also the fermentation of animal substances and organic matters in general. Thus, it arrests, if it be already begun, the fermentation produced by saliva and diastase in contact with starch. M. Polli has proved that alkaline or earthy sulphites possess the same antiseptic properties.

From a number of experiments made upon dogs, and alluded to in his memoirs, he has determined the safe and efficacious dose of sulphites for internal administration, the changes which they undergo in the organization, and their curative action in the affections produced by the injection of putrid or contagious matters into the blood.

The following is an account of some of his experiments:—

Ten grammes of sulphite of soda were given to a dog during a period of five days, then one gramme of pus was injected into the femoral vein. The animal became dull, and refused the food which it was offered, but the next day its spirits returned and it ate willingly. Two days after, the same experiment was repeated and was followed by the same results. At the end of a few days the animal was perfectly cured.

One gramme of pus was injected in two portions into the veins of a dog, of a more robust nature than that operated upon in the preceding experiment. The animal became spiritless, but the next day took some food; the following day it was very low, it breathed with difficulty, its wounds were sanious, its left leg and foot swollen, and it died ten days afterward.

An equal quantity of putrid blood was injected into the veins of three dogs; one died five hours after the infection, another after five days of illness, and the third, to which some sulphite of soda had been administered, after having experienced some trifling symptoms of illness, rapidly recovered.

Numerous other experiments made with putrid blood and morbific mucus proved that the animals died with all the symptoms of a general infection, whenever sulphite of soda was not administered, and that, on the contrary, they speedily recovered under its influence.

If these facts should be confirmed by other experiments, M. Polli will have rendered a great service to therapeutics, and will have thrown some light on the yet obscure causes of numerous diseases.

How to Read a Gas Meter.

The veracity of gas companies is often called in question by consumers of that article, though with how much justice is not, of course, for us to decide. The employes of the company maintain that they deal honestly by their customers, and the latter, knowing that they are in the power of the company, often pay their bills feeling dissatisfaction. The matter of dissatisfaction might be easily remedied. The process of reading a meter is almost as simple as telling the time of day by a clock, and may be acquired by any person of common intelligence in ten minutes. Below we give a brief explanation.

At the top of the meter is placed a small tin case, three or four inches long, which opens by means of a little door in front, and discloses a plate with three small dials, about an inch in diameter, which are furnished with one pointer apiece, moved by cog-wheels and pinions on the inside, which, in turn, are made to revolve by a large wheel propelled by the passage of the gas. The circle on the dial is divided into ten spaces, numbered around the edges with figures like the dial of a clock. The dial on the extreme right indicates, by means of its pointer, the burning of 100 feet of gas; the dial in the middle indicates the burning of 1000 feet, and the dial on the left the burning of 10,000 feet. For instance, the three pointers all stand at cypher. The pointer on the right hand dial having moved from cypher to figure one, indicates that 100 feet of gas have been consumed. If it move to the two, 200 feet, and so on, until the pointer has gone around the circle, and again reached the cypher, when 1000 feet have been consumed.

When this point has been reached the eye will be directed to the next dial, when it will be found that the pointer has moved to the figure one, indicating that 1000 feet have been consumed. The pointer on the first dial continues on, and still marking the amount passing. Suppose that at the end of the first month the pointer on the first dial stands at eight, that on the second between one and two, it is easy to understand that 1,800 have been consumed. When the pointer on the second dial reaches two, that on the first is again at cypher, indicating that 2,000 feet have been consumed. Thus it goes on until the pointer on the second dial has made the circuit, which indicates that 10,000 feet have been consumed, when the pointer on the third dial will stand at one. This, in turn, with an entire revolution, indicates that 100,000 feet have been consumed Taking the three dials in connection, the exact amount of cubic feet may thus be ascertained, commencing anew every time 100,000 feet have run through the meter and been consumed.

Now, to ascertain the exact amount of gas which will be consumed during the coming month of December, inspect the dials of the meter on the first of the month; the pointer on the left hand dial perhaps stands between the figures 6 and 7, indicating 60,000 feet. The pointer on the middle dial stands between 5 and 6, indicating 5,000 feet, and the pointer on the right hand dial stands between 7 and 8, indicating 700 feet. You thus have a total of 65,700 feet of gas previously consumed. Set the figures down, and at the end of the month again inspect the dial. The right hand dial stands, perhaps, nearly as before, and still indicates 60,000 feet. The middle one has moved on, and stands between 7 and 8, indicating 7000. The right hand one has made a number of revolutions, and stands between 1 and 2, indicating 100 feet. We then have a total of 67,100 feet. Subtract from this the number set down at the beginning of the month, and you have 1400 feet of gas consumed. Multiply this by the price per cubic foot, and you have your gas bill for the month. If housekeepers would take the trouble to do this themselves, they would satisfy themselves and be sure to guard against mistakes.---*Cincinnati Enquirer.*

Testing the Amount of Precious Metal in Photographic Solutions.

At a late meeting of the Photographic Association in London, F. M. Hart gave the following description of a convenient apparatus, and the mode pursued for testing photographic solutions:—

"The apparatus consists of a burette, something like Mohr's alkalimeter, the markings dividing it into sixteen equal parts, the whole containing exactly one ounce avoirdupois, or 439½ grains. The burette is furnished with a compression stop-cock of vulcanized india rubber, permitting the dropping of the solution to be easily regulated. The clip or pinch-cock is an improvement, in simplicity and efficiency, upon Mohr's. The burette is provided with a convenient support or stand. A sealed tube is filled with an accurately-weighed portion of pure dried chloride of sodium, which when added to eight ounces of distilled water, measured in the burette (ordinary graduated measures rarely being accurate), gives the test solution. A pipette, holding one drachm, is provided for drawing from the stock bottle of nitrate of silver solution an accurately-measured drachm. This is placed in a larger vessel, and added to about six times its bulk of distilled water, together with a few drops of nitric acid. An ounce of the test solution is now placed in the burette, and a portion of its contents dropped into the silver solution to be tested. If one division of the burette be emptied in precipitating the whole of the silver as a chloride, the solution has contained eight grains to the ounce, two divisions, sixteen grains to the ounce, and so on in proportion. The illustration of the method of estimating the amount of silver is as follows:—A sample of 15 grains of dried waste, purporting to be chloride of silver, was placed in a test tube with an equal weight of pure zinc: upon this was poured about a quarter of an ounce of dilute sulphuric acid, one part of acid in eight of water. The nascent hydrogen formed by the decomposition which followed uniting with the chlorine, threw down the silver in a metallic form. When this operation was completed, and the silver well washed, the addition of dilute nitric acid converted the silver into nitrate of silver, which was tested in the manner above described, and was found to yield 9 1/10 grains of nitrate of silver, which, containing about 63 parts in each 100 of pure silver, gave about 6 grains in the sample of waste tested. The burette, support, test-tube, box of pure zinc, tube of pure chloride of sodium, &c., all pack neatly into a small mahogany box."

Cement of Casein.

Dr. Wagner in *The Technologist* recommends the employment of a cold saturated solution of borax or of silicate of soda, to dissolve casein. The solution o-casein by borax is a clear liquid, of viscid consistence, more adhesive than gum, and able to replace in many cases strong glue. Stuffs of linen and cotton impregnated with this solution can be treated with tannic acid or acetate of alumina and rendered impermeable. Marsden, in his History of Sumatra, has shown that the chief cement employed in that country is made from curdled buffalo's milk, and called *prackee*. To prepare it, the milk is abandoned to itself until the cream comes, which is removed by a spoon and washed with water for use. The residual liquid of the milk is sour and thick, and it is this that they call *prackee*. They press it strongly so as to get it into the form of cakes, which are dried and become excessively hard. When it is to be used, a certain quantity is scraped off, mixed with quicklime in powder and moistened with milk. The cement thus obtained is extremely solid, and resists perfectly hot and humid climates a great deal better than glue; it is specially good for cementing porcelain.

M. LERMER, in Dingler's *Polytechnic Journal*, has published an interesting article on the corroding influence of aqueous vapor on lead pipes. This effect is found to greatly increase in proportion to the purity of the lead. By alloying the lead with tin, the action of the vapor is much reduced, and at a minimum when the lead is but 37 per cent of the mass.

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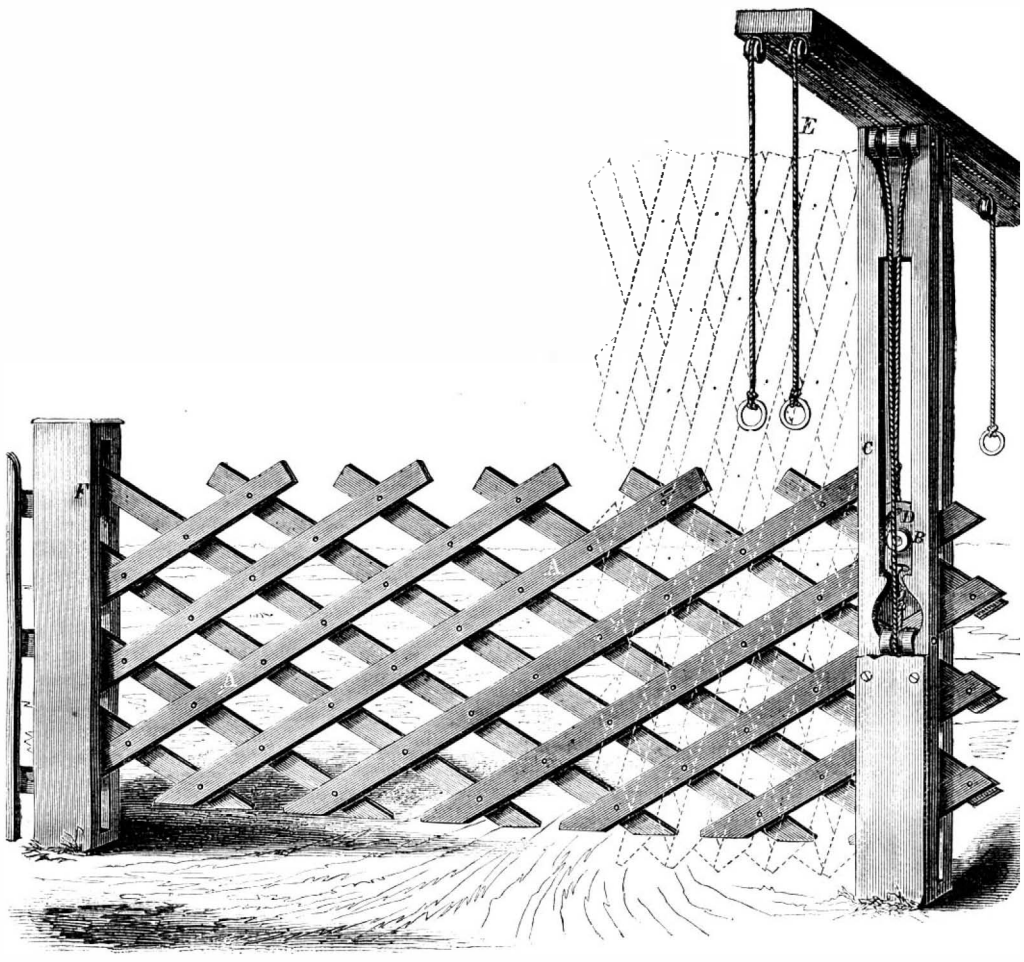
Improved Farm Gate.

So much inconvenience has been experienced in operating the old fashioned cumbrous gates that inventors have turned their attention to remedying the evil, and as a result of their researches, many patent gates have been illustrated in these columns during past years. Concerning the troubles spoken of, nearly every one can speak feelingly, or, at least, all those whose occupations require them to open and shut gates in their travels over their own farms or those of their neighbors; nervous horses become unmanageable sometimes at the sight of a ricketty, sagging gate swinging toward them and disasters not unfrequently occur from this source; there are also times when ladies, unattended, require gates to be opened which are beyond their strength. All these annoyances are remedied in the gate of which an engraving is herewith published. It is a neat and convenient structure, and one very easily operated; the manner of doing which has been very plainly delineated by our artist. The gate itself consists of a number of diagonal bars, A, of a suitable thickness, jointed together at the points of intersection. These bars are fitted with a roller, B, working in a slot in the upright, C. There is a yoke, D, attached to one joint of the diagonal bars, through holes in which the cords are rove; these latter run over small rollers at the top and bottom, as shown in the engraving, and terminate in rings at the outer ends. When it is desired to open the gate, the cord, E, is pulled down and the bars all drawn up together, as shown by the dotted lines; they recede further in the rear than the engraving represents, so as to give a clear passage, and have been purposely extended slightly that the reader may have a clear idea of their position. After passing through, the traveler has only to draw the other cord, which lowers the gate, on the opposite side, and the aperture is closed at once. These cords are to be covered with a board to preserve them from the weather. It will be seen that these operations can be performed quite readily from an ordinary carriage or wagon, and the equestrian has only to ride up to the horizontal arm, perform the act alluded to previously, and the way is clear for him to proceed. This gate has all its weight in the direction of the line of fence, the strain comes upon the post in the direction most favorable to resistance, and the ease and certainty with which it is otherwise operated, render it a desirable gate of the class mentioned—self-operating. It is not necessary to shovel three or four tuns of snow away from beneath it in winter time; and another feature important to the farmer is, that it can never, by any accident, be blown open, so as to admit straggling cows or other animals, to prey upon the crops; the end being received in the slotted upright, F, prevents such a disaster.

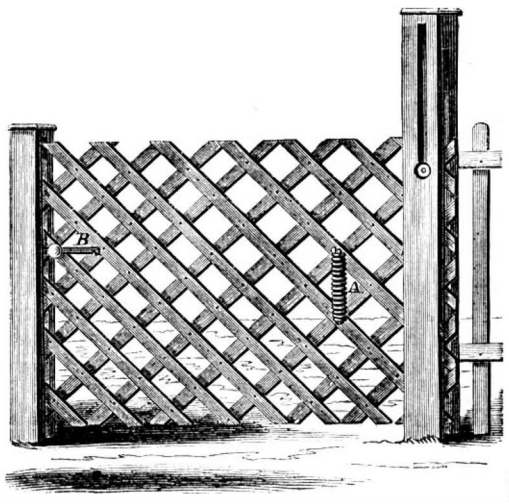
In the small figure below we present a view of a lesser gate on the same principle; it is intended for door-yards and private walks and residences. This gate differs from the large one in that it is self-closing; by means of the spring, A, and the latch, B, the gate may either be fastened open or left to close after the passage of individuals; the small roller travels in the slot, which is covered with a board in order to protect it from the weather. The latch is notched on its end so that it fits over a hook above the spring, and thus fastens the bars up as in the dotted lines in the large figure; on the other hand, this hooking may be omitted, and the elasticity of the spring throws the bars together in the manner previously set forth.

The incessant slam! slam! of gates hung in the ordinary way, that is, so as to swing in and out, tends not only to knock down the gate posts, but rips off the hinges, and offers facilities for mischievous boys that they are not slow to avail themselves of. This gate cannot be swung upon, as there are no hinges, and the line of its motion is coincident with or in the same direction as the fence itself. These desirable features will be noted by the attentive reader and credited accordingly.



CORBIN'S FARM GATE.

This gate is the invention of Dr. J. S. Corbin, of Ann Arbor, Mich., and was patented by him through the Scientific American Patent Agency on Nov. 17, 1863. Further information can be had by addressing the inventor at his place of residence.



The Irrepressible Inventors.

It matters little, to judge from the subjoined paragraph, whether inventors are at home in comfort or exposed to all the rigors of a soldier's life, the inspirations are always present, and in this case, at least, acted on. We can bear witness to more than one invention conceived and prosecuted successfully amid the hardships of camp life. An exchange says:—

"For example, I was shown a very remarkable cane the other day, which was made in camp by a private in the 6th Ohio regiment. It is made of cedar wood taken from the battle-field of Stone river, and mounted with shells found in that stream. It is of the ordinary size, octagonal, and faultless in shape and finish. The head is a solid cap of ivory-white shell, beautifully wrought. Besides this there are ninety pieces of shell mounting of various colors and shapes, among which I can name a crescent, Catholic church—with stained window-panes—cannon, swab, pickaxe, spade, decanter and glass, diamonds and circles; about four inches from the top is a hole three-eighths of an inch in diameter on one side, and one-eighth on the other side. In this is fixed an elegant microscopic likeness of President Lincoln sitting at his table, and, to all appearance, getting up a huge joke. The workmanship would stand a good chance of taking a premium at a State fair without having any mention made of the disadvantages under which it was performed—for it is most likely, though I cannot state certainly as to this, that a soldier's jacknife, and maybe an old file, were the only tools employed. Captain Peck, of Gen. Palmer's staff, owns the cane at present, having paid the neat little sum of fifty-one dollars for it.

"My attention was called to another case which deserves mention. Corporal E. R. Moore, 105th Ohio, invented what he calls a hydraulic engine. It will, in my humble opinion, come nearer a perpetual motion than any machine yet devised. Gen. Norton, Chief of Engineers, examined it closely and declared himself not prepared to say why the thing should not perform just what its author professes for it, which would be, in fact, to run perpetually without any addition of motive power. So much merit and genius is displayed in it, that the corporal will, no doubt, be detailed for the express purpose of making the experiment and developing his theory. He may fail, however, in this project, but I venture the prophecy that he will be heard from in the future."

[We have no doubt the corporal will be heard from again, but he will never turn up as the inventor of a perpetual motion: that is one of the things which the human mind is incapable of devising.—Eds.

Standard Mechanical Books.

To the numerous correspondents, transient readers and patrons of the Scientific American, who write to us for information concerning mechanical works and books of reference in all trades and handicrafts, we would say, read the advertisement of Henry Carey Baird, on page 366 of this number. For many years Mr. Baird has been publishing industrial and scientific works, and has probably as complete and varied a list of this kind of literature as can be found in the country. We hope, therefore, that our readers will bear our hint in mind, and not write to us asking if Mr. Baird has such and such works; *write to the publisher himself* and he will doubtless respond to your satisfaction.

The Atlantic and Great Western Railroad Managers expect to complete their line to Cincinnati in January, and thus to perfect the broad-gage connection by way of the Erie, Atlantic, and Great Western, and Ohio and Mississippi railroads between New York and St. Louis.

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VOL. IX, NO. 23 ... [NEW SERIES.] ..... *Nineteenth Year.*

NEW YORK, SATURDAY, DECEMBER 5, 1863.

OUR NEW DRESS.

With the commencement of the new volume on the 1st of January next, we shall present the SCIENTIFIC AMERICAN, which has now attained its eighteenth year, in a new and handsome dress—one, we trust, that will become its age and character. Though we are growing old and somewhat *gray* in the service, we have still vigor and determination enough left to make us desire that our next volume should be by far the best yet issued. We shall continue to trim the midnight lamp, if necessary, in order that we may keep the standard of the SCIENTIFIC AMERICAN up to any former period in its history. We believe that no other journal ever published has had truer or better friends than ours; and we again appeal to them to aidus in promoting its more widespread circulation. We do not depend upon agents; we prefer to rely upon the good words and deeds of our friends, and upon the well-established character of our journal, to increase its circulation. Friends! lend us a little of your valuable time in increasing our subscription list, and we will endeavor to more than repay you by making it still more worthy of your confidence and support.

HEALTHFULNESS OF WOOLENS.

The most suitable clothing for our variable climate is a subject of much importance to all. In the last report of the National Agricultural Department, there is an essay upon this topic, some parts of which we condense with comments. Wool being an excellent non-conductor of heat, it is very suitable as a material for clothing. Surgeons uniformly recommend it. Dr. Hall in his *Journal of Health* says:—"In winter and summer nothing can be better worn next the skin than a loose, red woolen shirt; loose for it has room to move on the skin, thus causing a titillation which draws the blood to the surface and keeps it there, and when this is the case no one can take cold. Cotton wool merely absorbs the moisture from the surface of the body, while woolen flannel conveys it from the skin and deposits it in drops outside of the shirt, and by this exposure to the air it is soon dried without injury to the body. Having these properties red woolen flannel is worn by sailors even in the mid-summer of the warmest countries. The common observation of all nations leads them to give their sailors woolen flannel shirts for all latitudes as the best equalizers of heat for the body."

In the French "Annales d' Hygiene" the following remarks occur:—"Diseases of the chest are early contracted by exposure to the cold without sufficient clothing. The greater portion of the children, from one to fifteen months old, who die in winter are killed by the cold, or diseases resulting from cold. The use of woolen clothing in winter is necessary for all, at least about the upper parts of the body; and even in summer the man, who from his profession is compelled to work in damp places, and is exposed to drafts, should not wear light clothes. Woolen socks should everywhere be adopted, for cold feet are almost always the cause of catching cold (catarrh), and an obstinate cough is known to cease from the exclusive use of this sort of clothing."

We have heard some persons say that their feet have been kept as warm with cotton as with woolen stockings; and there are some persons who cannot wear woolen flannel next the skin without suffering from cutaneous irritation. There are exceptions to all general rules, but undoubtedly woolen flannel affords the best clothing to be worn next the skin in our variable climate for at least nine months in the year. But white flannel is just as good for shirts as colored flannel. The cause of flannel fulling and becoming thick is owing to the rubbing which it receives in washing, and flannels of all colors full-up (felt) under similar treatment. All broadcloth dyed in the wool is fulled after it is colored. Flannels should never be rubbed upon a wash-board. The best way to wash flannels is to steep them in some strong soap-suds for about half an hour, then squeeze them between the hands for a short period, rinse thoroughly in warm water and hang them out to dry without wringing.

Woolen flannels are more extensively worn now than heretofore by ladies and gentlemen. This is due in a great measure to the very high price of cotton flannel, which is about 50 cents per yard—the quality being the same as that which sold for ten cents three years ago. Ladies' fancy colored petticoats—under the name of Balmorals (from Queen Victoria's highland underskirt style)—are quite common, and some of them are composed of fine, soft and warm wool, very suitable for our cold winters.

MANUAL DEXTERITY.

While the brain of mankind is invigorated and educated by correct study and discipline, the other parts of the body, more particularly the hand, and some organs, as the eye, can also be trained to tasks which at first thought seem wonderful and impossible. The great Creator has so cunningly endowed our bodies that there is no labor to be done, no skill in artificing or fashioning the metals, that is beyond our reach. Even jugglers, who have no trade, depend upon digital swiftness, or the sleight of hand, to perform their "miracles" successfully; and the safety of rope-dancers depends not merely upon their balancing poles, but upon the degree of education they have imparted to their feet. If in such callings as these, wherein the sole object is to please the multitude, the culture of the members and organs of the body is essential to success, may we not say that in the mechanic arts, upon which such important issues now hang, manual dexterity is utterly indispensable. We would, therefore, earnestly impress upon our mechanics the importance of it; this, allied to intelligence, is what makes first-class workmen. It is by no means to be despised, for excellence in this respect is attended by many other qualities which are of the utmost service in the trades. It is an old saying that "the hand follows the eye;" this is only another form of expression for manual dexterity. We see the truth of it exemplified every day; even sportsmen shoot on the wing instinctively, after the first lesson of following the bird in its flight is acquired, and the machinist, when chipping iron, always hits his chisel on the head, even though his eyes be closed or his face turned from his work: this is manual dexterity. By tuition his hand has learned to work in that direction, and although in this case he is not guided by his vision in any respect, his blow is none the less sure. Let any one who desires to prove the correctness of this assertion take a hammer and chisel, such as iron-workers use, and try to work with it; he will be speedily convinced that here at least manual dexterity is necessary to success and good workmanship.

Of two men working side by side on the same work, both actuated by right impulses, one will exceed the other just so far as he cultivates the motions and faculties, so to speak, of his fingers, all other things being equal. So much does the quality that we have made the caption of this article exercise its influence on men, almost insensibly, that we have seen artisans performing intricate tasks with an abandon and off-hand motion that was wonderful; and that, too, where the least false movement would spoil work which would cost them many a hard-earned dollar to replace.

Let us not be understood, however, as advocating *mere* dexterity as the highest good or chief requisite in a workman; there are many other qualities which are indispensable, and thoroughness and a conscientious desire to make each job better than the last are some of the essentials; but with these and the one we have discussed in detail, a mechanic cannot fail to achieve eminence in his calling.

TRUST NOT PRINCES ABOUT BALLOONING.

The great balloon, called the "Giant," built in Paris, by M. Nadar, and recently noticed in our columns, has been as unfortunate as the *Great Eastern* steamship. As a commercial venture it has resulted in entire loss, and its designer is now lying in a Parisian hospital with two broken limbs—mournful trophies of his over-confident courage. The great aerial ship sailed up and away triumphantly before the wind, but when the period for descending had arrived the troubles of the intrepid voyagers commenced. The valve to let out the gas was torn off, and the anchors when thrown out were incapable of arresting its flight, and it was driven along by a gale, until it struck the ground and collapsed. No one within was killed—a surprising fact considering their danger—but most of them were severely bruised. One of those on board was Prince Wittgenstein, who, before his ascent, published a pamphlet advocating the practicability of aerial navigation. In this literary document he proposes the construction of aerial ships, which shall maintain, as regular packets, communication between Paris, London and some other noted places of the earth. With one of them a squadron of artillery was to be transported to Algiers from France, without risking the dangers of the Mediterranean and the ordeal of sea-sickness. The scheme is certainly a grand one, and is a not very imperfect copy of the one connected with the great conical balloon, projected in 1848, to carry passengers between New York and California. It was to take at least fifty first-class passengers, and startle the deer and bears on the Rocky Mountains, but didn't do it. Numerous attempts have been made to achieve safe and successful aerial navigation, but in the present state of science, this is impossible. The very large bulk of gas required to float solid bodies in the great atmospheric ocean, places every balloon completely under the control of the aerial currents. The prince, who barely escaped breaking his neck, may have become a wiser and more scientific man by the practical experience gained on his aerial trip, but perhaps not. There are many persons who, when they have become wedded to certain ideas, never learn discretion or common sense from failure and misfortune, and this may be the case with both the Prince and M. Nadar. At some future day we may hear of these two worthies undertaking to reach Japan, or explore the regions round the North Pole with a new balloon.

DANGER OF COPPER SHEATHING TO IRON-CLADS---FOULING SHIPS' BOTTOMS.

Some very interesting practical experience has lately been gained in England in the use of paints for iron-clad vessels; also in the use of brass sheathing to prevent their bottoms from becoming foul. The large armor-frigate *Black Prince*, after having been five months in the water, was recently docked at Devonport and her bottom examined. It had been coated on one side with a paint chiefly composed of the oxide of copper, and on the other with one partly composed of the sulphate of copper. Both sides were corroded, but the sulphate of copper was the cleanest; still there were thousands of barnacles adhering to the plates on both sides. The *Resistance*, another smaller armor-frigate, was docked at the same time, but it had not been in service quite so long. One of its sides had been covered with the oxide of copper paint, and the other with another paint, the composition of which has not been published; along the bottom also several patches had been covered with thin porcelain plates cemented with marine glue. It was found that most of these plates had dropped off, the glue not being capable of holding them, and the rest of the bottom was nearly as foul as that of the *Black Prince*. But the most remarkable case, and one which deserves the attention of all naval constructors, was that of the *Royal Oak*, which was also docked at the same time. This was a wooden vessel which had been originally designed

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for a first-class line-of-battle ship, but was plated with iron below the deep load line; a band of lead was then run around the whole vessel, below which it was sheathed with Muntz metal—the common brass sheathing, containing about 60 per cent of copper to 40 of zinc. The iron plates were painted with red lead, and it was supposed that the intermediate lead band, coated with paint, would prevent contact and galvanic action between the iron and the sheathing. The latter was perfectly clean, but astonishment was caused by the galvanic action which had been induced between the iron and the sheathing. The lower tier of iron plates—each 15 feet in length, by 3 feet 2 inches in breadth, 4½ inches in thickness—were perfectly honey-combed, the holes varying in depth from one-fourth to five eighths of an inch. Judging from the rate at which the corrosion had proceeded, the plates would have been entirely dissolved had the vessel remained in the water many months longer. It had been supposed that wooden vessels could be built with iron plating descending below the water-line, and that their bottoms could be sheathed with copper, and thus remain as clean as copper-bottomed wooden vessels. Indeed, this very mode of constructing war vessels has been advocated by a French naval architect as being superior to all others, and several French and Italian armor-clads have been built upon such ideas. The practical and expensive experiment made with the *Royal Oak* affords us evidence that copper, or copper alloys, cannot be employed with safety connected by sea water with iron on a vessel. The connection of these two metals forms a galvanic battery leading to the rapid decomposition of the positive metal. In the construction of armor-clad and mercantile iron vessels, great care should always be exercised to avoid connecting copper, or brass, or any negative metal with the iron, where the two metals will be exposed to water. It puzzles us to account for the trouble which naval dignitaries seem to have in protecting the bottoms of iron-clad vessels, when they have had the perfect success of iron merchant steamers to guide them for twenty years.

THE DELAY BEFORE CHARLESTON.

Since the day when Sumter was virtually blotted from the map of fortifications by the united efforts of Gen. Gillmore and the iron clad monitors, the loyal portion of the country has eagerly awaited some sign or token that hostile demonstrations were to be renewed against Charleston. Up to this hour the people have waited in vain, and the impenetrable ships—and that mighty Achilles of water-craft, the *New Ironsides*—swing idly at their anchors; but from their sides no hoarse-voiced rifles speak to overthrow the city of treason. The "tremendous" obstructions, so long the bugbear of timid commanders—the fearful Wagner, the frowning walls of Sumter—these have one by one disappeared, and still the monitors linger in the background; apparently not the slightest effort being made to carry out the plans intrusted to them.

Why should such delay be longer tolerated? The army has done its work, and the navy must now perform its share as well; the elements have torn up the obstructions, and have left the way clear for an advance; yet everyone complains, and not without reason, of the dilatory conduct of the naval portion of the expedition.

We are well aware that history is full of examples of long sieges and slowly-executed plans against coveted posts or points in an enemy's country; but that does not signify that the consummation of the triumph which is sure to come, sooner or later, should be so long deferred. The people chafe, and their uneasiness is manifested in the counting-room where gold fluctuates; in the parlor, when earnest discussion upon the state of the country is introduced; in fact, wherever two or three men of loyal feelings are gathered together. We are not of that class of journalists who would override impossibilities with a dash of the pen, take huge forts with a flood of ink, or reduce harbor obstructions with a broadside of invective; but we desire to be told in plain terms why it is that the interests of our people are so injured, the national debt increased so enormously, and the progress of the war so painfully delayed by the indecision which prevails in the conduct of the siege of Charleston? If it be designed to "starve" the enemy out, such fact should be announced; if merely to frighten him, the people should be informed; but if an active and earnest assault is determined upon, the propellers should turn round, the guns be run out, and either the city be taken, or the iron-clads sunk. Commodore Dupont—now Admiral—who has been so bitterly abused, advanced with his fleet straight upon the enemy; but under the present command the iron clads are merely idle "ships upon a painted ocean."

NEW ANTI-PHOSPHORUS SAFETY MATCHES.

Although friction matches prepared with phosphorus have become necessary and convenient to every family, still many dangers arise from their common use, and great evils attend their manufacture. Those operatives who are exposed to the fumes of phosphorus in match factories are subject to a more fearful disease than natural cancer. The bones of the jaw are affected in a peculiar manner by this poison, and they corrode and decay under its influence. The use of allotropic phosphorus has mitigated this evil to some extent, but has not, as we have been informed, eradicated it. Phosphorus friction matches are also dangerous because they contain the elements for instantaneous ignition within themselves; hence, disastrous fires have resulted from their thoughtless use or from accidental ignition. To obtain a good friction match, free from phosphorus, thus to avoid its poisonous influences, its unpleasant odor and dangerous qualities, has been a desideratum. This has been accomplished by the invention of T. W. Hjerpe, of Stockholm, Sweden, for which patents have been taken out in all the kingdoms of Europe, as also in the United States on the 13th of October last. In the production of these new matches two compounds are used, which may be mixed together and applied to tip the matches; but the patentee prefers to apply one of the compounds to the matches and the other to the frictional surface upon which they are to be rubbed. The matches are therefore harmless and safe, and will not ignite unless rubbed upon the surface prepared for them. Being free from phosphorus, those who make them are secured from the fearful disease to which we have alluded, and they are also more safe than common matches. The one compound is applied to the ends of the matches and is called the "match compound;" the other is called the "rubber compound," and is applied to the surface upon which the match is to be rubbed. Such matches ignite instantaneously when rubbed upon the prepared rubber surface, but not otherwise. Neither of the compounds described in the specification of this patent diffuse an offensive odor, nor do they produce poisonous effects. The prepared frictional surface can be cleaned by water and made to last for a long time, while the matches themselves are unimpaired by moisture. From the description given of the characteristics of these matches, their immunity from danger in the hands of children and their other good qualities will be generally appreciated. The agency for this match is conducted by L. Otto P. Meyer, No. 44 Cliff street, this city.

DEPREDATIONS OF REBEL PIRATES.

The wholesale depredations committed on our commerce by the two or three rebel vessels afloat, have caused so much feeling among the mercantile community that they recently addressed a letter to the Secretary of the Navy, reminding him of the state of affairs, and asking that active measures be adopted in order to rid the seas of these freebooters, to restore the peace and security which formerly reigned. The Secretary responded fittingly to the temperate appeal of the merchants, assured them that everything the Government could do was being done, and that shortly a fleet of fast vessels would be upon the ocean capable of great achievements.

The speed of the English vessels furnished to the rebels to prey upon our commerce has been greatly over-estimated, and the Press generally has accepted the statement (by whom put forth we don't know) that the *Alabama* is capable of steaming at the rate of fourteen knots an hour under all circumstances; certainly vessels which are obliged to keep the seas for months at a time are not able to do so, owing to the inefficient condition of their machinery. It is this very circumstance which renders the rebel pirates helpless on the seas before their equals, not having the chance to refit and overhaul which our own vessels enjoy. There are in the navy at present a number of vessels every way superior in point of speed and build to the *Alabama;* these ships are the *De Soto, Bienville, Vanderbilt, Fort Jackson,* &c., and it is a misapprehension to attribute fabulous speed to the rebel vessels when they do not possess it. Save in one instance, that of the *Hatteras*, the rebels have always gallantly run away from their pursuers and have escaped, not by the fleetness of their heels, but by stratagem, by the interference and favoritism of governors of foreign ports, by taking advantage of dark nights, fogs, signals; in short, they have been successful by wholesale intrigue and complicity, and not, as before stated, by their superior sailing qualities. Of course, while such practices prevail, speed is of no utility to a vessel; for by dodging in and out of neutral ports, and employing the artifices before alluded to, they can inflict great damage and themselves escape destruction.

If one of our fast cruisers could sight the *Alabama* in mid-ocean that would be the end of her, supposing the armaments and skill of our gunboat to be equal to the destruction of the pirate; such an advantage the enemy never gives us, and although we have had a fleet of ships after the pirates for the last twelve months, they have as yet met with no success. This misfortune is not due to a want of speed, for the navy is in possession of many vessels captured from the English, and those recruited from merchant lines famous for their fine ships; the ill fortune which has thus far marked our attempts must be attributed to some other cause.

WANTED! A MARINE PATROL.

If the Navy Department had two or three first-class steamers, such as the *Fulton*, on blockade duty, there would soon be an end to the enterprize of our British friends. Upon her last trip the *Fulton* captured a notorious blockade runner after all the regular naval ships had been entirely distanced. And now, while returning a second time from Port Royal, the officers of the same ship espied a suspicious sail, and immediately putting on all speed succeeded, after a spirited chase, in overhauling the craft. These facts are worthy of notice. The *Grand Gulf*, a new and fast propeller, also in chase of the blockade-runner, was distanced by the *Fulton*, and but for the efforts of the latter the prize would have escaped, as have hundreds of others. A marine police, or patrol, is urgently wanted to arrest these unscrupulous traders on the high seas. There are many vessels in the navy service more celebrated for speed than the *Fulton*, but they are so loaded down with 8 inch guns, two-hundred-pounders, and what not, that they are incapable of doing their best.

It would be quite as appropriate to send a man in armor after a marauder on horseback, as one of the heavily-laden navy merchant vessels to chase the light-draft blockade-breakers. It does not seem, from the particulars of the *Fulton's* successes, that any great display of force is required, and the batteries on blockaders which throw metal enough to dismantle Gibraltar, are only a dead weight and an incumbrance that should be left at home. Place a few such ships as the *Fulton, De Soto, Fort Jackson,* &c., about Wilmington; let them carry, say one good rifle-gun for the sake of the noise it makes, and there will soon be an end of blockade-running, and a marked addition to our navy register which will make the little enterprises of the rebels highly unprofitable.

Extension of Patents.

Many valuable patents are expiring every week for the want of a little enterprise in procuring their extension. Patents granted during the year 1850 may be extended if the proper testimony can be produced to sustain the case; provided always that the application for the extension is filed in the Patent Office at least ninety days before the date of expiration. All needful information will be furnished upon application to the publishers of this journal. Seven years of the extended term of a patent is frequently of much more value to the patentee than the fourteen years of the original term.

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"Ripe Old Age."

The man that dies youngest, as might be expected, perhaps, is the Railway Brakeman. His average age is only 27. Yet this must be taken with some allowance, from the fact that hardly any but young and active men are employed in the capacity.

At the same age dies the factory workwoman, through the combined influence of confined air, sedentary posture, scant wages, and unremitting toil.

Then comes the railway baggageman, who is smashed on an average, at 30.

Milliners and dressmakers live but little longer. The average of the one is 32, and the other 33.

The engineer, the fireman, the conductor, the powder maker, the well digger, and the factory operative, all of whom are exposed to sudden and violent deaths, die on an average under the age of 35.

The cutler, the dyer, the leather dresser, the apothecary, the confectioner, the cigar maker, the printer, the silversmith, the painter, the shoe cutter, the engraver and the machinist, all of whom lead confined lives in an unwholesome atmosphere, none of them reach the average age of 40.

The musician blows his breath all out of his body at 40. The editor knocks himself into *pi* at the same age.

Then come trades that are active or in a purer air. The baker lives to the average age of 43, the butcher to 49, the brickmaker to 47, the carpenter to 49, the furnace-man to 42, the mason to 48, the stone-cutter to 43, the tanner to 49, the tinsmith to 41, the weaver to 44, the drover to 40, the cook to 45, the inn-keeper to 46, the laborer to 44, the domestic servant (female) to 43. The tailor lives to 43, the tailoress to 41.

Why should the barber live till 50, if not to show the virtue there is in personal neatness in soap and water?

Those who average over half a century among mechanics, are those who keep their muscles and lungs in healthful and moderate exercise, and are not troubled with weighty cares. The blacksmith hammers till 51, the cooper till 59, the builder till 52, the shipwright till 56, the wheelwright till 50. The miller lives to be whitened with the age of 61. The ropemaker lengthens the threads of life to 54. Merchants wholesale and retail till 52.

Professional men live longer than is generally supposed. Litigation kills clients sometimes, but seldom lawyers, for they average 55. Physicians prove their usefulness by prolonging their own lives to the same period. Clergymen, who, it is to be presumed, enjoy a greater mental serenity than others, last till 65.

Seafaring life and its adjuncts, seem, instead of dangerous, to be actually conductive to longevity. We have already seen that the shipwright lives till 56. The sailor averages 43, the caulker 64, the sailmaker 52, the stevedore, 57, the ferryman 65, and the pilot 64.

A dispensation of Providence that "Maine Law" men may consider incomprehensible is, that brewers and distillers live to the ripe old age of 64.

Last and longest-lived come paupers 67, and "gentlemen" 68. The only two classes that do nothing for themselves, and live on their neighbors, outlast all the rest. Why should they wear out, when they are always idle?

Reduction of Chloride of Silver.

MM. Millon and Commaille have communicated to the French Academy of Sciences, an extremely elegant reaction, by which absolutely pure metallic silver may be precipitated from its ammoniacal combinations, with all the accuracy necessary for rigid analysis, and in such a division as to render it available in the arts.

The reagent employed is ammonio subchloride of copper. When this substance is added to ammonio-nitrate or ammonia-chloride of silver, the whole of the silver is at once thrown down in the metallic state as a grey amorphous precipitate. The precipitate readily assumes a metallic luster under the burnisher, and may be applied to the surfaces of wood, stone, &c. The reaction takes place so perfectly, that it may be employed either for the estimation of silver, or for the analysis of a mixture of sub and protosalt of copper; every atom of silver thrown down representing one atom of sub-chloride of copper. It is, however, especially valuable for reducing the chloride of silver residues of the laboratory. These are dissolved ammonia, and the ammoniacal subchloride of copper added, when the metallic silver is at once obtained in its purity. Moreover, it is only necessary to digest the filtrate with a little powdered zinc in a closed flask, in order to again reduce the copper salt, and it is ready for a fresh operation. In this way, the same quantity of copper solution suffices for an indefinite number of precipitations.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list:—

Substitute for Lace, Embroidery, &c.—The object of this invention is to produce a fabric which, when properly prepared or pressed, will form an imitation for lace and other collars, embroidery, braiding, trimmings, straw and other goods. The invention consists in a fabric composed of muslin or other textile fabric treated with a solution of silicate of potash or soda, commonly known as soluble glass, together with two sheets. of paper, one on either side of the muslin, said paper being drawn through the solution of the silicate and spread on the muslin and pressed before being perfectly dry, in such a manner that, by the soluble glass, the muslin and paper are firmly glued together, and a fabric is produced which can be pressed into any desirable shape, and which is waterproof, so that it can be washed with a sponge without the least injury. Henry Loewenberg, 400 Fourth street, New York city, is the inventor of this improvement.

Sheet-metal Cans.—This invention consists in making the seams or joints in cans or other vessels of tinplate or other sheet metal, by simply turning in singly the margins of the plates at a suitable angle, and soldering together the outer faces of the said turned-in margins, which are thus made to form a double rib projecting directly inward from the interior of the vessel, and give the vessel much greater stiffness than any other kind of joint. Herman Miller, of New York city, is the inventor of this can. and the patent has been assigned in full to Messrs. Reynolds, Devoe & Pratt, of 106 Fulton street, New York city.

Apple Parer.—The object of this invention is to obtain an apple parer in which no time will be lost by the removal of a pared apple from the fork and the placing of an unpared apple thereon, and also to obtain one which may, while in operation, work with a continuous movement, so that there will be no cessation of work while the machine is in motion. Emmons Manley, of Marion, N. Y., is the inventor of this improvement.

Sewing Machine.—This invention consists in a novel and very simple arrangement of the parts of a sewing machine for making a chain stitch with a single thread, whereby the whole are enabled to be made entirely of one piece of metal. It also consists in the manufacture of the cloth-holding device,. the needle bar, and the needle also, if desired of a single piece of steel or other metal, or of two or more pieces united in such manner as to be equivalent to a single piece. This is one of the most novel and curious inventions we have ever seen; it is by M. D. Heyer, of New Orleans, La.

Vehicle Spring.—This invention consists in a novel arrangement and combination of springs, whereby greater comfort and ease will be obtained in riding, and the vehicle to which the improvement is applied, rendered more elastic and ornamental than those provided with the ordinary springs. Eliphalet C. Brook, of San Francisco, Cal., is the inventor of this mprovement,

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VARIABLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired.

ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING NOVEMBER 17, 1863.

Reported Officially for the Scientific American.

***** Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.**

40,592.—Floor Cloth.—Stephen M. Allen, Woburn, Mass

I claim, first, As a substitute for canvas and cloth used in the manufacture of painted carpets or floor coverings, sheets made by combining scrap leather with fibrous substances in the condition and manner here inbefore set forth.

Second, I claim the stuffing, painting, printing or staining in the manner and for the purpose specified of sheets made by combining scrap leather with fibrous substances, in the condition set forth.

Third, As a new article of manufacture I claim floor covering made substantially as herein described, by first forming a sheet of leather scraps and vegetable or animal fiber as described, and by then coating the same with paint or its equivalent for ornamenting the same as set forth.

40,593.—Fabric for Insoles.—Stephen M. Allen, Woburn, Mass.:

I claim as a new article of manufacture and substitute for leather used in the manufacture of insoles, the herein described composition, the same consisting in combining untanned leather scraps, with tanned leather scraps, when the latter is prepared and mixed with vegetable fibrous matter, substantially in the manner herein set forth.

I also claim as a new article of manufacture an inner sole for boots and shoes, formed of the within described composition, substantially in the manner herein before set forth.

40,594.—Lantern.—James S. & T. B. Atterbury, Pittsburgh, Pa.:

We claim a metal plate reflector in combination with a lantern globe, substantially in the manner and for the purpose set forth.

40,595.—Corn Planter.—H. F. & T. R. Bargar, Border Plains, Iowa:

We claim the arrangement and combination of the cylinder, H, pawl, J, lever, M, provided with the two valves, p s, rock shaft, I, and lever, K, as and for the purpose herein set forth.

[This invention relates to a new and improved machine for planting corn in check rows, and it consists in a novel seed-distributing device operated by the hand of the attendant and so arranged th the corn may be dropped with certainty at the desired spot.]

40,596.—Stave-making Machine.—Alvy T. John B., & Solomon Barnes, Groesbeck, Ohio. Ante-dated Nov. 11, 1863:

We claim a stave-making machine, having three different parts or devices, one for cutting the stave to the proper length; the other for dressing the sides of staves in proper shape, and the third for dressing the edges of the same, all combined and arranged together on one bench, and each part consisting substantially of the devices and parts set forth in this specification.

40,597.—Grain Drill.—Philo D. Beckwith, Dowagiac, Mich.:

I claim, first, The arrangement of the fixed projections, g g, on the stationary plate or jaw, F, in combination with the screw bolts, m, angular slots, h h, and the movable plate or jaw, G, substantially as herein described and represented in the drawing for the purpose set forth.

Second, The combination of the tubular guards, rollers or wheels with extension hubs, and the axle, substantially as and for the purposes set forth.

40,598.—Hay-loading Machine.—Wm. H. Bentley, Westford, N. Y.:

I claim the arrangement of the rake-heads, G, grooved board, h, and grooved roller, D, with the apron, C, rake, B, and discharging board, H, all in the manner herein shown and described.

I also claim the arrangement of the caster wheel, J, spring, K, and brace-handle, I, with the frame, A, all in the manner herein shown and described.

[This invention consists in the employment or use of an inclined endless apron, provided with one or more rake-heads, and placed in a mounted frame having a rake at its lower end and an inclined discharging board (at its upper end the frame being provided), at its back end with a yielding caster wheel and with a handle, the latter being applied and arranged in such a manner as to serve, when not in use as a handle, as a support for the discharging board; all the parts being so combined that the implement, as it is drawn along, will rake up the hay from the windrow and discharge it into a cart or wagon which travels along by the side of the invention.]

40,599.—Fire Arch or Furnace of Evaporating Apparatus.—Sidney Berry, Grand Rapids, Mich.:

I claim the walls, D and C, with the air-chamber between them, the stucco layer or filling, G, and the inverted brick arch, F, terminating in walls, B, the whole constructed and arranged substantially as set forth.

40,600.—Beehive.—T. F. Bingham, Gowanda, N. Y.:

I claim the partition plate, D, provided with holes, h, as shown, and an oblong opening, i, covered with wire cloth, j, in connection with the slot, O, in the box, F, and the arrangement of the two spare-honey boxes, E E, for the purpose of controlling the ventilation of the hive as set forth.

40,601.—Harvester.—Thomas Brett, Geneva, Ohio:

I claim the frame, A, attached to the harvester, in combination with the plate, B, and springs, D D, all arranged to operate in the manner substantially as and for the purpose herein set forth.

[The object of this invention is to apply a seat to a harvester in such a manner that the seat will not be subjected to the sudden movements and shocks or concussions produced by the harvester as it is drawn along, and the driver therefore not be liable as heretofore to be thrown from the seat.]

40,602.—Gas Regulator.—Frederick Wm. Brocksieper Bridgeport, Conn.:

I claim the arrangement and application of the regulating screw, A, or its equivalent in combination with the elastic diaphragm, C, and valve, D, in the manner and for the purpose substantially as herein set forth and described.

40,603.—Vehicle Spring.—Eliphalet C. Brooks, San Francisco, Cal.:

I claim the shackles or bars, B, connected together and applied to the axles, A A, as shown in combination with the curved bars, E E L, and the springs, I I and K, with or without the rubber, c g c', all arranged substantially as and for the purpose herein set forth.

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40,604.—Cherry Stoner.—H. Buckwalter, Kimberton, Pa.:

I claim, first, The rotary disk, E, with curved ribs, a, in combination with an adjustable hopper, F, and side chamber, G, constructed and operating as and for the purpose shown and described.

Second, The arrangement of the shoulder or offset, d, groove, e, and shoulder, f, in the channel, G, to operate in combination with the rotary ribbed disk, E, substantially as and for the purpose specified.

[This invention consists in the arrangement of a rotary disk with curved ribs in combination with an adjustable hopper and a grooved channel, in such a manner that by the action of the curved ribs on the edges of the hopper and channel the stones are squeezed out and caused to escape sideways through said channel, and the pulp is deposited in a suitable vessel or reservoir below.]

40,605.—Manure Distributor.—Jason Cadwell, Dexter, Mich.:

I claim the vessel, A, provided with a handle, B, and a perforated bottom, a, and with or without the register, D, substantially as and for the purpose herein set forth.

[The object of this invention is to obtain a device of simple construction for sowing plaster and other pulverulent manures on plants, one which will admit of the work being done with the greatest facility and in a far more perfect manner than it can be done by applying it with the hands.]

40,606.—Machine for making Nuts.—Wm. Chisholm, Cleveland, Ohio:

I claim, first, The cams, A and A′, B and B, in combination with the mandrel, C, arranged and operating as specified.

Second, I claim the friction plate, D, when arranged and used substantially as set forth.

Third, I claim the male die, E, and plate, G, in combination with the sides, F F′, and plate, f, of the matrix when arranged as and for the purpose specified.

Fourth, I claim the recess, F″, in the side, F, and the corresponding projection, G′, in the head plate, G, for the purpose described.

Fifth, I claim securing the male die in place by means of the jam block, c, and set screw, d, constructed and arranged as described.

Sixth, I claim the herein-described device for steadying and adjusting the punch.

Seventh, I claim the mandrel, H, bar, g′, and rod, H′, for removing the formed nut from the punch in the manner specified, by the retreating action of the mandrel, C.

40,607.—Tobacco Cutter.—Thomas L. Church, Syracuse, N. Y.:

I claim, first, The employment or use of the clamp, C, substantially such as herein specified for the purpose of securing the knife blade, B, to the stock, A.

Second, The cam, c, in combination with the clamp, C, knife blade, B, and stock, A, all constructed and operating in the manner and for the purpose substantially as herein specified.

Third, The stops, g, in combination with the clamp, C, knife, B, and stock, A, all arranged and operating as and for the purposes set forth.

[This invention consists in the employment or use, for the purpose of securing a tobacco knife to the stock or head, of a clamp, consisting of a flat plate with stops and secured by means of screws and fastened down upon the knife by means of a cam in such a manner that a thin flat blade of sheet steel can be used for the knife, and that said knife can be instantaneously fastened and released and also set to the desired point without trouble or loss of time.]

40,608.—Balloon.—J. H. Connell, Lexington, Ky.:

I claim the posts, D D′, in combination with the balloon, A, and car, E, constructed and applied in the manner and for the purpose substantially as herein shown and described.

[This invention consists in cutting out the canvas or other material forming the shell of the balloon in such a manner that when the balloon is inflated it assumes the shape of a huge boat and passes readily through the air; also in the arrangement of posts secured to the ends of the balloon, and also to the bow and stern of the boat or car, in such a manner that the balloon and the car are firmly connected and in passing through the air act as one body.]

40,609.—Gate.—J. S. Corbin, Ann Arbor, Mich.:

I claim the arrangement of the fixed pulleys, g h i, and cord, f, with the post, B, slotted as shown, gate, A, and bolt, d; all constructed and operating as herein shown and described.

[An engraving and description of this invention will be found on another page of this paper.]

40,610.—Corn Planter.—John R. Davis, Bloomfield, Iowa:

I claim the employment or use of the cone pulleys, C C′, and elastic band, C2, in combination with the crank, D′, pitman, G, post, H, and bar, K, with their accessories, for imparting a variable reciprocating motion to the slide, M; arranged and operating substantially as set forth.

[This is an ingenious and effective contrivance for depositing seed with regularity and uniformity in any desired quantity.]

40,611.—Horse-shoe Machine.—S. W. Davis, Wilmington, Del.:

I claim, first, In combination with the two arms, K K, of the jaws, and the reciprocating cross-head, I, the two blocks, J and J′, when the same are rendered adjustable either together or independently of each other, substantially as and for the purpose described.

Second, A supplementary rib, q′, formed on the edge of the rounded rib, q, of the forming dies, Q, as set forth for the purpose specified

40,612.—Water Wheel.—M. Decamp, South Bend, Ind.:

I claim, first, The ring, E, placed on the bed-piece, d, in which the shaft, D, is stepped and fitted in the lower rim, a, of the wheel, C, substantially as and for the purpose specified.

Second, The conical or funnel-shaped ring, F, fitted in the circular opening, h, in the decking or planking, B, and within the upper rim, a, of the wheel, substantially as and for the purpose set forth.

[This invention relates to an improvement in horizontal water wheels, and it consists in the employment or use of a removable funnel-shaped ring fitted in the lower part of the pen stock and directly over the wheel, whereby the wheel may, when necessary for repairs and other purposes, be very readily raised from the pen stock without removing the decking or planking. The invention further consists in the employment or use of a ring placed at the bottom of the wheel which is open and arranged in such a manner that the water, when the wheel is in operation, will not be supported by the latter, and consequently undue friction avoided on the step of the wheel shaft.]

40,613.—Hoop Machine.—John B. Dougherty, Rochester, N. Y.:

I claim the method herein described of forming splints into hoops by passing them between a series of rollers, arranged and operating in the manner and for the purpose substantially as described.

40,614.—Harrow.—John H. Edward, Ottawa, Ill.:

I claim in combination with the convex or elliptical bars, A, the short inclined teeth, c, when constructed and operated substantially in the manner and for the purposes herein described.

I also claim in combination with the convex or elliptical bars, A, and short inclined teeth, c, the links, B, substantially in the manner and for the purposes described.

I also claim in combination with the elliptical hinged bars, A, the harrow teeth, C, and the short clod-breaking teeth, c, when the latter are the prolongation of the former, substantially in the manner and for the purpose described.

40,615.—Steam Engine.—John Fish, New York City:

I claim in a single cylinder engine having two pistons with their piston rods, each working through the opposite cylinder heads, the arrangement of the cross-head, E, in connection with the piston rod of piston, B, whereby the piston rod, cross-head and connecting rod of piston, b, can work through the space or aperture of cross-head, E, upon their own crank by which means two connecting rods of equal length can be obtained each working upon an opposite crank upon the same shaft, substantially as specified and in the manner herein set forth.

40,616.—Acoustic Telegraph.—Lancelot Hope Everitt, New Orleans, La.:

I claim two phonographic locmanauds mounted by acouglottic batteries—names implying machines which generate intelligent sounds; which they communicate to the spiritual sense of hearing, through the nervous papillœ of the index finger, and thumb tips; and through the acoustic trumpet of the external ear; being the natural parts of the body, which have direct relationship therewith; so that persons who are deaf and dumb, and blind, arising either from physical defects, or from length of distances, may hear and hold converse together, by means of these locmanauds and copper wires attached thereto.

I claim also, and desire to secure within the Letters Patent, the method of evoking these intelligent sounds, as herein described, using for that purpose the Inci, the Mallei, the Phonic Fossæ, the Tympani and keys.

I also claim, and desire to secure within the Letters Patent, the mode of intensifying and modifying sounds and chimes systematically; by means of a right Diatonic staff, and a left Diatonic staff; or one single Diatonic staff, as herein described; using for that purpose bars of wire projecting from the staff; and placed at different distances from one another; and from the facial incus; and striking the facial malleus, upon the facial incus, from the projecting points of these bars; and in this way evoking similar and dissimilar sounds.

I claim also and desire to secure within the Letters Patent, the method of assorting similar and dissimilar intensities of sounds, under symbolic formulæ, representing the various letters of the alphabet, Arabic Notations, &c., and dividing them into certain divisions, each division of which represents a separate and distinct order of sound, as herein described: using for that purpose geometric, arabic, and arithmetical figures; and also the mode of separating sounds by silent diatessaron, giving force and decided character to a phonic letter or notation, or valuation.

I claim also and desire to secure within the Letters Patent, the method of communicating sermons to a deaf and dumb audience, by means of a radiating locmanaud, as herein described; using for that purpose one cylindrical incus, supported by its pedestal, its anterior face pressed by the facial malleus; which is attached to the tympanum and key; and all supported by the stapes, its posterior face capped by the instrument of radiating wires; and in this way evoking sounds upon the facial incus, which directs them simultaneously into all the radiating wires, centered in the copper cap, which covers the posterior face of the incus.

[An engraving and description of this invention will appear in an early number of the Scientific American.]

40,617.—Attachments to Lamps and Gas Burners for holding Vessels or Shades over the Flame.—Warren L. Fish, Newark, N. J.:

I claim, first, The combination of a support for sustaining vessels to be heated or other articles with a standard rod and adjustable clamp, in such a manner that it may be attached to any convenient part of a lamp or burner and when so attached shall hold the said vessel or article in a position immediately over the flame, substantially as herein described.

Second, The combination with the support and suitable clamping device of an extension standard rod, adjustable substantially as herein described.

40,618.—Furnace for Steam Boilers.—Henry Gerner, New York City:

I claim, first, The fire door, D, arranged with abutments, d, in the case, a, and with slots, e, in its rear side and an adjustable opening, c, in its face, in the manner and for the purposes shown and described.

Second, The shutters, E, in combination with the regulator, G, and fire bricks, H, with slots, r, constructed and operating in the manner and for the purpose substantially as specified.

Third, The regulator, G, arranged with chambers, m n, channels, o p, and valve, q, and operating by the action of mercury or other suitable liquid, substantially in the manner and for the purposes set forth.

Fourth, The perforated partitions, I, made of fire-proof material and arranged under the boiler, A, in the manner and for the purpose herein shown and described.

[An engraving and full description of this invention will be found on page 344 of the present volume of the Scientific American.]

40,619.—Treating Marine Algae to obtain a material for Veneering, Inlaying, &c.—Thomas Goulston Ghislin, London, England:

I claim the preparation of marine plants above referred to and of other analogous vegetable productions, and also the applications of the products thereby obtained by the methods herein above described and to the purposes herein above named or by any similar methods for any analogous purposes.

40,620.—Filter.—Charles M. Halsted, Troy, N. Y.:

I claim a water filter having an upper chamber, G, intermediate chamber, H, lower chamber, I, wire sieve or strainer, C, cup, F, supports, b b, cloth sieve or strainer, e, supports, a a, the whole being arranged and combined, substantially as and for the purposes herein described and set forth.

40,621.—Flax-breaking Machine.—Jacob Hanes & Lukas Kohler, Millersburgh, Ind.:

We claim the combination of the fluted rollers, B C C′, elastic bars, E F, slides, D, set screws, e e, and feed boards, H H, all arranged to operate as and for the purpose herein set forth.

[This invention consists in the employment or use of three fluted rollers, one of which has its shaft fitted in permanent or stationary bearings, the shafts of the other two being fitted in sliding bearings, arranged with springs and set screws in such a manner as to cause the rollers to operate in the most efficient way in breaking the flax The invention also consists in the novel manner of arranging or placing the sliding bearings in the frame of the machine, and in the employment or use of the two feed-boards arranged relatively with the lower roller in such a manner as to admit of the flax being fed into the machine at either of two opposite sides.]

40,622.—Sewing Machine.—W. D. Heyer, New Orleans, La.:

I claim, first, The arrangement of the clamping device, h g, and feeding device, b, relatively to the needle operating device, substantially as and for the purpose herein specified.

Second, Making the cloth-holding device, the feeding device the needle bar, and the needle also if desired of one piece of metal, or of two or more pieces united in such manner as to be equivalent to one piece, substantially as herein specified.

40,623.—Churn.—John Houston, Lake Village, N. H.:

I claim the improved churn as constructed, not only with the series of cleats or current breakers, b b b b, arranged within its tub as specified, but with the dasher composed of the flat annulus or perforated disk, c, the horizontal arms, f f, and the vertical arms, D D, made and arranged together in manner and so as to operate substantially as described.

40,624.—Lantern.—J. H. Irwin, Chicago, Ill.:

I claim the combination and arrangement of the button, C, and rod, d, with the circular aperture, D, operating in the manner substantially as described.

Second, I claim providing the rod, d, with the flange, c, when arranged with respect to the casing, B, and aperture, D, in the manner herein shown and described.

40,625.—Tedders for Animals.—G. F. Jerome, North Hampstead, N. Y.:

I claim, first, An elevated tedder sustained by posts, so that animals may feed under the same in combination with a spring or weight, by means of which the said tedder is allowed to yield to the movement of the animal or the slack of the rope taken up, as specified.

Second, In combination with the said yielding tedder I claim the stop bars, g, for the purposes specified.

Third, In combination with the said yielding tedder I claim the swivel sliding ring, i, to receive the leading rope or halter as specified.

Fourth, I claim a series of posts arranged in rows, as specified, to receive and sustain the yielding tedder above the animals grazing, for the purposes and as set forth.

40,626.—Machine for Cutting Objects from Leather Cloth, &c.—W. H. Johnson, Springfield, Mass.:

I claim, first, Combining in one machine the three following elementary parts of mechanism, namely, a cutting or embossing apparatus, consisting of one or more cutting or embossing dies and a device for forcing the material on to them, a table and presser for holding and guiding the material properly to the cutting or embossing apparatus, and a reciprocating nipper or clamp for drawing the material forward from the table over the dies to the proper position to be operated upon by them, and then releasing it, and retiring to permit the dies to operate, the whole being made to co-operate automatically, substantially as described.

Second, The employment in combination with the cutting or embossing apparatus of a rising and falling table and presser plate, operating substantially as described.

Third, The employment, in combination with the cutting or embossing apparatus, of the feeding nippers or clamp which seize and convey the material to the proper position over the dies and then release it and retire to permit the dies to operate, substantially as described.

Fourth, The combination of the feeding nippers or clamps operating as described, with a rising and falling table, and rising and falling with it, substantially as described.

Fifth, Opening and closing the jaws of the nipper or clamp by means of the lever, M, rod, N, and adjustable stops, Q and R, or their equivalents, and spring, o, co-operating with the longitudinal movement of the nippers, substantially as described.

Sixth, Inclining the axis of the cutting dies toward each other, so as to bring their contiguous edges close together when more than one is used, substantially as described.

40,627.—Machine for Pressing Soap.—J. H. Keller, New Orleans, La.:

I claim the drop, B, in connection with the expanding mold, G, slide, I, and cap dice, M, all combined and arranged to operate as and for the purpose herein set forth.

[This invention relates to a new and improved device for pressing and molding soap, and it consists in the employment or use of a drop, an expanding mold and a cap die, all arranged to operate in such a manner as to perform the desired work in a perfect and expeditious manner.]

40,628.—Horse Hay Hook.—Aaron Kratz, Plumbsteadville, Pa.:

I claim the hooks, A A, pivoted to the rod or bar, B, as shown, in combination with the bar, D, provided with the hook, E, and the catch or fastening, F, and connected to the hoops, A A, by the chains, I I, all arranged to operate substantially as and for the purpose specified.

[This invention relates to a new and improved implement or device for elevating hay, straw, &c., in barns and depositing it in mows. The invention consists in the employment or use of two hooks pivoted to the lever end of a tang, the upper end of which is provided with an eye or ring to receive a hook, the latter being pivoted in the lower end of a bar, which has a catch or fastening fitted in it to hold or retain the hook, said bar being connected to the hooks by chains, and all arranged in such a manner as to form a very simple and efficient device for the purpose specified.]

40,629.—Gang Plow.—William Kuehn, Lively, Ill.:

I claim, first, pivoting or hinging the front ends of the beams, E E′, to the top of the axle tree, A, of two carriage wheels, in such manner that a lifting bar, c, or its equivalent, may be applied beneath them to allow the beams to have an unrestrained swinging movement vertically, and to enable them to be operated by said bar, substantially as described.

Second, A driver's seat arranged over the axle, A, and attached to the hounds, C C, which are secured rigidly to said axle, in combination with swinging plow beams, E E′, substantially as described.

Third, The arrangement and combination of the pivoted plow beams, E E′, pivoted draft pole, D, and extended hounds, C C, with the supporting bar, c, whereby the driver is enabled to raise the rear ends of the plow beams, by pressing upon the rear end of the draft pole, the driver's seat being supported by and upon the hounds, substantially as described.

Fourth, Applying the leverage power to the hinged beams, E E′, in rear of the axle, A, beneath said beams by means substantially as described.

Fifth, The combination of swinging plow beams, E E′, hinged to the axle, A, extended hounds, C C, lifting bar, c, pivoted draft pole, D, transverse stop plate, b, and treadle, l k, all arranged and operating substantially as described.

40,630.—Fire-boxes for Locomotives.—J. P. Laird, Altoona, Pa.:

I claim the within-described arrangement of tubes, H, passing from the rear plate or tube sheet to the crown for the purpose of sustaining the partition, I, of fire clay or other refractory material within the fire-box of a locomotive boiler, in the manner herein set forth.

40,631.—Potato-washer.—J. Lawton, S. Hibbert and J. Rhodes, Manchester, England:

We claim the employment and use of a double arrangement of rotating brushes revolving in opposite directions and acting upon potatoes and other esculent roots for the purpose of decorticating or cleaning them, as hereinbefore described, set forth and fully illustrated in the drawings attached.

40,632.—Still for Petroleum, &c.—Charles Lockhart and John Gracie, Pittsburgh, Pa.:

I claim the combination with the goose neck, C, of the horizontal or lower pipe, D, and valves, E E, in the manner herein shown and described.

Second, The combination of the curved hinged plates, I, and attached scrapers, d, with the shaft, F, and bottom, a, in the manner herein shown and described.

[This invention relates, first, to a means for taking off vapor from the still at the same hight from the surface of the oil, and at different hights during the process of distillation. Second, to a means for keeping the bottom of the still clean or free from incrustation. Third, in an improvement in the bottom itself. Fourth, in an improved stuffing-box pertaining to the bottom cleaned, and fifth, in the adaptation of a receiver to catch and hold the matter scraped off from the bottom of the still.]

40,633.—Fabric for making Imitation Lace, &c.—Henry Loewenberg, New York City:

I claim a fabric obtained by treating muslin and paper with soluble glass, in the manner and for the purpose substantially as specified.

40,634.—Boot-crimping Device.—Thomas Madgett, Buffalo, N. Y.:

I claim the crimping-plate, E, in combination with the pressure-plates, C C′, attached to the hinged bar, B, the above parts being arranged with the lever, G, and link, g, or their equivalents, to operate as and for the purpose herein set forth.

[This invention relates to an improvement on the single lever boot-crimping machine, which consists of fixed pressure plates and a movable crimping plate. The invention consists in arranging the pressure plates and the crimping plate, in such a manner that both may be moved simultaneously in opposite directions, whereby it is believed that a more efficient device is obtained for the purpose than those previously devised.]

40,635.—Cooking Stove.—Samuel Pierce, Troy, N. Y. Ante-dated April 29, 1863:

I claim the downward projecting bridge or deflector, p, constructed and combined with the long center, and with the fire-box chamber of a cooking stove, substantially as and for the purposes herein described and set forth.

I also claim the vertical fire-grate, g, constructed and combined with the fire-box or chamber, and with the hot-air chamber, x, substantially as and for the purposes herein described and set forth.

40,636.—Buckle Gag-runner.—John McMartin, Janesville, Wis.:

I claim the combination of the gag-runner and buckle as arranged and described.

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0,637.—Water Elevator.—Hiram Nash.—Pittsfield, Mass.:

I claim, first, The cross bar, G, provided with blocks, e e, or their equivaleat, having double bearings, f f, when said cross bar is used in combination with the heads, a′ a′, of the windlass, for throwing the bucket outward, in either position it may come up, substantially as herein set forth.

Second, In combination with the cross bar thus arranged and provided with the arm, i, and crosshead, K, I also claim the double rods, d d′, and valves, H H′, for adapting the discharge to either side of the bucket that may come outward, substantially as herein set forth.

Third, I also claim the double spout, I I′, in combination with the valves, H H′, situated respectively over each spout, and operated automatically, in such a manner that while one allows the discharge of water at the proper position, the other shuts it off, substantially as herein described.

Fourth, I also claim the arrangement and combination of the cross bar, G, double rods, d d′, valves, H H′, and double spout, I I′, substantially as specified.

Fifth, I also claim, in combination with a bucket provided with the double spout, I I′, and valves, H H′, the two branch cords or chains, b b, connected with the single cord or chain, F, in such a manner that, when the bucket is fully raised, one end or the other of the said spout will come in coincidence with the curb spout, substantially as herein set forth.

Sixth, In combination with the bucket thus connected with the windlass, I also claim the guides, K K, for centering the bucket, substantially as described.

Seventh, I also claim the combination of the brake, M, lever, L, pawl, D, ratchet wheel, C, and head, a′, or equivalent, of the windlass, whereby, when the brake is applied, the pawl is disengaged automatically, and *vice versa*, substantially as described.

Eighth, I also claim the loose winch, E, ratchet disk, Q, and pivoted latch, p, when used in combination with the windlass, B, and a bucket provided with the double spout, I I′, and valves, H H′, substantially as specified.

Ninth, I also claim the arrangement of the brake, M, lever, L, pawl, D, ratchet wheel, C, winch, E, ratchet disk, Q, and pivoted latch, P, substantially as herein described.

40,638.—Fruit Gatherer.—O. B. Parker, Hopkinton, Mass.:

I claim the said fruit basket or gatherer, as constructed, not only with the opening in its side, or with a flat or door thereto, but with a trigger or lever catch applied to the bottom, the whole being as and to operate substantially as described.

40,639.—Smut Machine.—Isaac Phillips, Burlington, Iowa:

I claim, first, Providing the cylinder, C, with one or more ledges, c, in combination with the beaters, E and F, and the arm, a, arranged and operating substantially as herein set forth and described.

Second, I claim providing the beaters, E and F, with the re-entrant faces, m n, when used in combination with the ledges, c, and the pronged arm, a, as and for the purposes herein specified and shown.

40,640.—Apple Parer.—Emmons Manley, Marion, N. Y.:

I claim, first, The sliding plate, O, placed on the tilting or rock shaft, I, the racks, Q Q, on bar, P, the segment racks, R, on the plates, S, which have the knife bars, T, attached to them, in combination with the two rotating forks, C C, all arranged substantially as and for the purpose herein set forth.

Second, Giving the reciprocating motion to the plate, O, by means of the bevel wheel, H, rotated from the shaft, F, through the medium of the bevel pinion, E′, the friction roller, K, on the wheel, H, and the pendants, q q′ q″ q‴, of plate, O, arranged substantially as described.

Third, Tilting the plate, O, and shaft, I, through the medium of the lug, l, on the wheel, H, the long pendants, q′ q‴, on plate, O, and the spring, M, on the rod, L, the latter being connected to shaft, I, by the rod, K, and pendant, J, as set forth.

Fourth, The shifting bar, d*, with the forked shafts, B B, attached and operated from the tilting or rock shaft, through the medium of the bar, N, fitted in the notch, n, in the projection, O, of the bar, d*, as set forth.

40,641.—Corn Harvester.—T. A. Risher, Oskaloose, Iowa:

I claim, first, The arrangement of shaft, K, with the worm wheel, n, when used in connection with the shaft, I, to which the segment, m, is attached, substantially as and for the purpose specified.

Second, Hanging the concave, T, which receives the corn, at two points to the outer side of the shocker frame, substantially as and for the purpose set forth.

40,642.—Compound for Liniment.—M. C. Rose, New York City:

I claim the liniment composed of the ingredients and compounded as specified, for the purposes set forth, the same being a new article of manufacture.

49,643.—Composition for Salve.—M. C. Rose, New York City:

I claim the salve composed of the ingredients and in the proportions specified, the same being a new article of manufacture.

40,644.—Apparatus for Cooling Lard.—V. E. Rusco, Chicago, Ill.:

I claim a machine or apparatus for cooling lard constructed substantially as herein set forth.

Second, Subjecting fluid hot lard which is finely divided to the action of finely divided streams or currents of cold air under pressure, as it flows from the rendering tank or apparatus, substantially as and for the purposes set forth.

40,645.—Spring Bed Bottom.—George Schott, New York City:

I claim the cross bars, c c, and hooked studs, e e, in combination with the pending hooks, g g, on the slats, f f, and the elastic cord or strap, h, for the purpose and substantially as specified.

40,646.—Fruit Dryer.—Henry Speer and Jno. L. Harlow, Chelsea, Mich.:

I claim, first, The trays or racks, B, when the same are provided with perforated bottoms and with blinds, d, and legs, c, and arranged in relation to each other and to the house, A, as shown and described.

Second, The recesses, e, in the house, A, in combination with the perforated bottoms of the trays and with the blinds, d, as and for the purpose specified.

Third, The pipe, E, arranged in combination with the trays, B, and stove, D, substantially in the manner and for the purpose set forth.

[The object of this invention is to produce a fruit-dryer which combines in a single and convenient manner the two methods of kiln drying and open air drying, so that the fruit can be exposed to the sun or open air or to the artificial heat of a stove, simply by drawing out or pushing in a series of trays or racks as circumstances may require.]

40,647.—Drawing and Camera Table.—J. B. Stackpole, Boston, Mass.:

I claim the combination of the adjusting standards, J I I, operated either by means of the barrel and cord or by ratchet and pinion, with the double folding boards, D and C, substantially as described and for the purpose herein set forth.

40,648.—Advertising Directory.—B. F. Stilwell, San Francisco, Cal.:

I claim attaching thereto or connecting therewith the box for cards, bill heads, &c., substantially as herein set forth.

40,649.—Asphaltic Cement.—Abraham Straub, Milton, Pa.:

I claim the within described cement when composed of the ingredients united substantially in the proportions herein specified, for the purpose set forth.

40,650.—Artificial Variegated Marble.—A. Straub Milton, Pa., and Isaac Straub, Cincinnati, Ohio:

As a new article of manufacture we claim the sea-shell or ornamental marble, composed of the ingredients united substantially in the proportions herein set forth.

40,651.—Asphaltic Paving or Flag-stone.—A. Straub, Milton, Pa., and Isaac Straub, Cincinnati, Ohio:

We claim the within-described ingredients, when combined together substantially in the proportions described for the purpose set forth.

40,652.—Brace.—A. W. Streeter, Shelburne Falls, Mass.:

I claim the combination of the knob, C, and socket, D, with their screws, a a, for the purpose of uniting said knob and socket to each other, and to the bit stock, A, in the manner and for the purpose herein set forth.

40,653.—Harness Saddle.—S. E. Tompkins, Newark, N. J.:

I claim a harness saddle having its check-rein hook, C, secured to it by having its shank, a, prolonged and extending down around the front end of the saddle and backward underneath the tree, A, with two screws, E, passing upward from underneath the shank, a, and through countersunk holes therein into the tree, and either with or without the nut, F, substantially as described.

[This invention relates to a new and improved manner of attaching the check-rein hook to the saddle, whereby the nut which has hitherto been used on the bolt underneath the saddle is dispensed with, and the hook at the same time permanently secured to the saddle.]

40,654.—Stereoscopic and Photographic Album.—J. Q. A. Tresize, Zanesville, Ohio:

First, I claim the particular form of a folding stereoscope, as herein described.

Second, I claim the opening or recess for the reception of the stereoscope, attached to the album, or inclosed within it, as herein described, or in any manner substantially the same, and for the use herein set forth.

40,655.—Canteen.—J. M. Trowbridge, U. S. Army:

I claim the cooking canteen composed of a bottle, A, and the inclosing boiler, B C C′ D E E′, or their equivalents; the whole being so adapted and arranged as to combine the functions of a canteen with those of a cup and boiler, within convenient and portable limits, substantially as set forth.

40,656.—Steam Engine.—Henry Waterman, New York City:

I claim the method, substantially as herein described, of constructing the interior surfaces of the cylinders of steam engines, in whole or in part, of as thin metal as will retain the pressure of the steam used, as set forth and for the purposes specified.

40,657.—Sewing Machine.—Louis Bollmann, Vienna, Austria, assignor to Nicholas Shaugnessy, New York City:

I claim, first, The employment, in connection with a mechanism for sewing seams, of two adjustable plates or straight edges, B and D, and an adjustable block or stop, F, when the said plates or straight edges, B and D, are so made and arranged as that while one serves to have the plait formed over it and regulates the width of the plait, the other acts, in conjunction with the previously sewn seam, as a gage to regulate the distance between the plaits, substantially as hereinbefore set forth.

Second, The employment, in connection with a single supporting arm or holder, A, of a plaiting plate, B, and a corder, G, when these several parts are so constructed as that either of the last-named two may be used in combination with the first-named, substantially as and for the purposes hereinbefore described.

Third, The employment, for the purposes hereinbefore explained, of removable or changeable presser-foot shoes or bottom pieces, H, which are so constructed and combined with the presser foot, as that they may be clasped or sprung on to the latter, in the manner substantially as hereinbefore described.

40,658.—Harvester.—Alzirus Brown and L. G. Kniffen, Worcester, Mass., and T. H. Dodge, Nashua, N. H.:

I claim, first, The combination with the poie iron, shoe, K, and main frame, of the cramping bar, Q, and link, R, substantially as and for the purposes set forth.

Second, The combination of shoe, K, and hanger iron, J, with the lower end of the cramping bar, Q, substantially as and for the purposes set forth.

Third, The combination of bar, P, having a series of catches, b, on one edge or face, and a retaining hook or catch, m, on the other, with spring, j, and loop, k, when said parts are constructed and arranged to operate in relation to each other, substantially as and for the purposes set forth.

Fourth, The combination with the main frame, A, and tongue, O, of the draft iron, T, and chain, 3, constructed and arranged in relation to each other, substantially as shown and described.

40,659.—Preparing Vegetable Fiber for Paper, &c.—J. B. Fuller (assignor to himself and James P. Upham), Claremont, N. H.:

I claim, first, Curing vegetable fiber in a vessel, by means of jets of steam, introduced into such vessel, substantially as and for the purposes specified.

Second, I claim an open grinder receiving the fibrous material directly from the curing vessel, as specified, so that the grinding operation is independent of the curing operation, but the vegetable fiber is ground while hot, as set forth.

Third, I claim separating the fiber from the overflow water by means of the sieve, o, and brush, p, as set forth.

Fourth, I claim heating the interior of the grinder, n, by the introduction of steam for the purposes specified.

Fifth, I claim a column of water rising sufficiently above the grinder to produce the hydrostatic pressure necessary for causing the fibrous materials to pass through the grinder, as specified.

Sixth, I claim the double volute or spiral channels for cooling the cured vegetable fiber and imparting the heat thereof to the uncured vegetable material traveling in the intervening volute channels in the opposite direction, as specified.

40,660.—Rotary Pump.—A. H. Knapp, Newton Center, Mass., assignor to J. A. Locke, S. G. B. Coombs and D. H. Priest:

I claim the piston and revolving butment rotary pump, the employment of gearing cogs, m m and n n, respectively upon the intermediate portions of the peripheries of the piston wheel and butment, alternating in action, and in combination with the pistons and their concavities, substantially as and for the purpose herein specified.

I also claim the water chambers, G T, in the end of the pump case, separate from and opposite to the piston chamber and butment recess, substantially as and for the purpose herein set forth.

I also claim the arrangement of the inlet and outlet apertures, P Q, at nearly equal hights, and near each other, in combination with the pistons and abutment, substantially as and for the purposes herein specified.

I also claim, in combination with the piston and revolving butment rotary pump herein described, the drain aperture, j, passage, k, and cock, K, substantially as and for the purpose set forth.

40,661.—Sheet-metal Can.—Herman Miller (assignor to C. T. Raynolds, F. W. Devoe and Charles Pratt), New York City:

I claim making the seams or joints of sheet-metal vessels by turning in the marginal portions singly, at proper angles, and soldering the faces of the said portions together, to form a double inwardly projecting rib, substantially as herein described.

40,662.—Apparatus for Condensing, Evaporating and Cooling.—J. J. Miller, Chicago, Ill., assignor to himself and Ernst Prussing:

I claim an apparatus for either or all the purposes named, consisting of a series of corrugated or grooved pans or plates with inclined bottoms, constructed and supported as described, and arranged one above another within a close chamber, in the manner set forth.

40,663.—Stove.—D. L. Stiles (assignor to M. Huntington, agent), Rochester, N. Y.:

I claim the combination and arrangement of opposite flues, e e′, in a cylindrical body, B, so as to form an oblong fire chamber, D, within, and separated by curved flue plates, C C′, therefrom, one flue, e, descending from the upper part of said fire chamber, to a flue space, i, in the bottom of the stove, and the other flue, e′, ascending from said flue space to the smoke pipe, substantially as and for the purposes herein specified.

I also claim the construction of the curved flue plate, C, with a bent perforated top, d, and draught pipe, h, all cast in one piece, in combination with the cylinder, B, for the purposes set forth.

I also claim, in combination with the induction pipe, h, the register, G, having its air holes, l l, only in the upper half, and in the outer edge of the circle, and its closed part, m, situated opposite the said induction pipe, substantially as and for the purposes herein set forth.

40,664.—Hoop Machine.—John Thompson (assignor to himself and Martin Reed), Rochester, N. Y.:

I claim, first, The combination of the irregular shaped knife, D, with the automatically-adjusting rest, C, and adjustable gage, b, as and for the purpose set forth.

Second, The employment of the knife, D, constructed with one or more offsets in its cutting edge, as described and for the purpose set forth.

Third, The combination of the wheel, E, the spring pawl, d, and catch, f, or their equivalents, with the rest, C, as and for the purpose set forth.

40,665.—Gun-stock Machine.—E. S. Wright, New York City, and E. Allen, Newark, N. J., assignors to E. S. Wright and L. M. Hills:

I claim holding gun stocks to be dressed in a universal joint, or its equivalent, whereby movements may be given to the stock, while being dressed, from the center of motion of the said joint, in the manner and for the purpose substantially as herein set forth.

40,666.—Gun-stock Machine.—E. S. Wright, New York City, and E. Allen, Newark, N. J., assignors to E. S. Wright and L. M. Hills:

I claim two vertical cutters working upon opposite sides of the stock in combination, with a table and former, substantially as herein set forth.

40,667.—Gun-stock Machine.—E. S. Wright, New York City, and E. Allen, Newark, N. J., assignors to E. S. Wright and L. M. Hills:

I claim a turn-table, C, combined with a cutter and former, in the manner and for the purpose substantially as herein set forth.

Second, A conically-formed cutter when the axis of the said cutter is set at an angle with the cut to be made, substantially in the manner described and for the purposes specified.

40,668.—Rheumatic Liniment.—Louisa E. Anderson, St. Louis, Mo.:

I claim the medicine or liniment compounded of the materials and in the manner substantially as set forth above.

40,669.—Treating Tanned Leather.—Benj. K. Lightfoot, Philadelphia, Pa.:

I claim the treatment of tanned leather by the application to the same, substantially in the manner described, of petroleum or any oily hydro-carbons holding paraffine in solution, in combination with tallow or its equivalent.

RE-ISSUE.

1,570.—Machine for Drying Wool.—J. A. Locke, Watertown, Mass., assignee by mesne assignments of John Petrie, Jr. Rochdale, England. Patented April 1, 1862. Ante-dated August 12, 1854:

I claim, first, The herein-described machine or apparatus for drying wool or other fibrous substance, the same consisting of a chamber or inclosure, closed on top by a perforated or other open-work sheet, arranged to support and maintain in position over the said chamber or inclosure, the material to be dried, and having combined with it a fan or its mechanical equivalent to force or draw atmospheric air through the said sheet, substantially as set forth.

Second, The combination with a chamber or inclosure provided with a fan, as described, of an inclined table or tables made of perforated or woven wire sheets, whereby a large quantity of wool or other fibrous matter may be acted upon, substantially as set forth.

Third, The combination with a chamber or inclosure and fan of a perforated or woven wire flap or flaps hinged at one side and forming the top of the chamber, for the purpose of facilitating the discharge of the wool, &c., after being dried, substantially as set forth.

Fourth, The combination with a chamber or inclosure covered on top with a perforated sheet or sheets, or the equivalent thereof, and provided with a fan or fans, as described, of steam pipes arranged within said inclosure, in the manner and for the purposes set forth.

Fifth, The general construction, combination and arrangement of apparatus, consisting of a case or air chamber, fan and inclined perforated or woven wire flaps to receive the wool to be dried, said flaps being disposed so as to expose the wool on an extended surface to the immediately surrounding air to facilitate its placement, drying and removal, substantially as hereinbefore set forth.

DESIGNS.

1,849.—Belt Fastener.—A. O. Baker, Providence, R. I.

1,850.—Letter-press Type.—David Bruce, New York City.

EXTENSIONS.

Binder Pulleys for Belts and Brakes.—M. C. Bryant, Lowell, Mass. Patented Nov. 13, 1849:

I claim, first, To communicate power to machines used for extracting liquids from other matter, by means of a movable binder pulley and a slack belt, the binder pulley being pressed upon the belt by means of a shifting weight, as herein described.

Second, To attach to the same part to which is connected the binder pulley, the friction stop or brake, so that by the same movement that the binder is taken from the belt, the brake is brought to act upon the machine to stop it by the means herein described.

Method of Fitting the Heaving Socket and Head of Windlasses.—Charles Perley, New York City. Patented Nov. 12, 1849:

I claim, as new and useful in effect, the application of the boss, c, with the wrought-metal band, 2, and square, 1, acting with the bush e, to connect the windlass head, B, with this shaft, b, and at the same time support the heaving socket and flanch, in such a manner that either the head or the heaving socket and flanch, or both, can be immediately replaced, when injured, the whole constructed and operating substantially as described and shown.

Form of Teeth in Harvesting Machines.—E. B. Forbush, Buffalo, N. Y. Patented Nov. 27, 1849:

I claim an open triangular hollow tooth for cutting grass and grain, with its results as herein described.

Railroad Truck.—J. F. Rogers, South Bend, Ind. Patented Nov. 27, 1847:

I claim the arrangement and combination of the journal boxes, c, with the spring casing or pockets, b b, through which bolts are affixed to the frame and acting as guides to the boxes, the whole being constructed and arranged in the manner and for the purpose substantially the same as herein specified.

TO OUR READERS.

Patent Claims.—Persons desiring the claim of any invention which has been patented within thirty years, can obtain a copy by addressing a note to this office, stating the name of the patentee and date of patent, when known, and inclosing $1 as fee for copying. We can also furnish a sketch of any patented machine issued since 1853, to accompany the claim, on receipt of $2. Address MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

Models are required to accompany applications for Patents under the new law, the same as formerly, except on design patents when two good drawings are all that are required to accompany the petition, specification and oath, except the Government fee.

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New Pamphlets in German.—We have just issued a revised edition of our pamphlet of *Instructions to Inventors*, containing a digest of the fees required under the new Patent Law, &c., printed in the German language, which persons can have gratis upon application at this office. Address

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Binding the "Scientific American."

It is important that all works of reference should be well bound The Scientific American being the only publication in the country which records the doings of the United States Patent Office, it is prepared by a large class of its patrons, lawyers and others, for reference some complaints have been made that our past mode of binding in cloth is not serviceable, and a wish has been expressed that we would

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adoptthe style of binding used on the old series, *i. e.*, heavy board sides covered with marble paper, and morocco backs and corners.

Believing that the latter style of binding will better please a large portion of our readers, we commenced on the expiration of Volume VII. to bind the sheets sent to us for the purpose in heavy board sides, covered with marble paper and leather backs and corners.

The price of binding in the above style is 75 cents. We shall be unable hereafter to furnish covers to the trade, but will be happy t receive orders for binding at the publication office, No. 37 Ps Row, New York.

Notes and Queries

R. W. T., of Ky.—Spontaneous generation in the vegetable and animal kingdoms is a mooted question. Some naturalists believe in it, but the most distinguished do not. We have never observed anything to sustain the spontaneous generation theory.

C. J. P., of Ohio.—There would be no gain in using steam between the pistons in a cylinder, as a substitute for one piston, with cylinder heads.

E. A., of Conn.—Strong caustic soda lye will strip the tin from your scraps. You can make the lye by boiling one pound of soda and half a gallon of slacked lime in a gallon of water for about ten minutes; then allowing the sediment to settle. The clear liquor is the lye, into which put your scrap tin. The tin will soon be dissolved, leaving the iron clean, which may then be washed and used for any purpose for which you may find it suitable.

M. J. G.—Black lead crucibles are suitable for some and unsuitable for other chemical operations. They are employed for smelting some metals, but are unfit for use in dissolving metals by acids.

H. G. K., of N. Y.—There are no works published in our country devoted specially to the woolen manufacture and the dyeing of woolen goods. "Ure's Dictionary of the Arts" contains the most information on these subjects.

H. A. D., of Pa.—We have not heard of a single factory running in this country wherein fine flax yarn is spun for the weaving of linen sheeting. It is our opinion that the manufacture of fine flax goods will yet become a stable interest on this side of the Atlantic.

S. M. T., of Pa.—A good varnish for paper and maps is made with gum mastic, 6 parts; sandarac, 3 parts; dissolved in a mixture of 3 parts turpentine and 32 parts of alcohol. These ingredients with the exception of the turpentine are placed in a copper vessel tinned inside, situated in a bath of hot water, and are stirred for several hours until the gums are dissolved; the turpentine is then added, and the stirring continued an hour longer, after which strain the varnish and set it aside for use.

H. B., of Mass.—Isinglass dissolved in whisky may answer your purpose as a varnish for drawings, but it is not equal to the white varnish made with balsam.

D. K., of Ill.—W. Fairbairn's work on mill-wrighting is an English publication. It may be imported for you, we suppose, by some of the Chicago booksellers.

G. L. J., of N. Y.—Your galvanic battery for electrotyping is as good as you can get anywhere, and your want of success in obtaining good deposits is owing to defective manipulation. Smee's work on electro-metallurgy; also, Walker's contains practical information. Your gypsum casts should have been coated with wax, then with plumbago. We suppose you have not used a plate of copper on the wire opposed to the one on which the casts were to be electro plated. Persevere and success will attend your efforts.

A. S. L., of D. C.—We have not examined the work to which you refer with reference to the error relating to the power of expanded steam. There are several hand-books on mechanical engineering which never should have been published. They contain the most vague and incoherent statements, and abound in pragmatic rules, without an attempt being made to explain them.

D. L. E., of Mass.—Very little is known about the rebel iron-clad vessels. There are no facilities in the entire South to build a first-rate armor-clad war steamer. Patents are granted in England to the introducers as well as the inventors of new improvements.

B. F. W., of Ind.—Hydrogen is one of the simple elements and is the lightest of all gases. It burns with a blue flame and gives out a most intense heat. We have never seen coal oil that would burn without smoke, like lard or whale oil, in a common lamp.

C. P., of Pa.—The sparkling scales in the minerals you have sent us are yellow mica, and are of no value whatever.

R. S. A., of Ill.—The crank question has been fully discussed in former volumes of the Scientific American, and may be said to be an exhausted subject. If there is a loss of power in the crank, it must be caused by friction on the crank pin, which you do not admit. A new method of cryptography, for the purpose stated by you, is patentable. Any art or improvement that is new and useful is patentable.

Money Received.

At the Scientific American Office, on account of Patent Office business, from Wednesday, Nov. 18, to Wednesday, Nov. 25, 1863:—

M. & H., of N. Y., $25; W. N., of N. Y., $25; B. M., of N. Y., $25; A. P., of Mass., $41; W. A. S., of N. Y., $20; M. & M., of Cal., $20; J. W. P., of Minn., $20; M. M. C., of Ill., $20; W. S. A., of N. Y., $270; J. J. De B., of N. Y., $20; J. W. R., of Conn., $20; C. N. S., of Pa., $20; W. S., of N. Y., $16; G. B. O., of N. Y., $31; J. L. K., of Pa., $49; F. & P., of N. Y., $25; H. & E., of Mass., $30; L. E. P., of Mich., $26; F. McC., of Conn., $16; J. W. P., of Mass, $16; O. J. B., of Cal., $16; P. B., of N. J., $16; H. K. J., of Conn., $16; W. L., of Va., $14; C. D. H., of Colorado, $25; R. T., of N. Y., $25; W. F. R., of N. Y., $25; M. H. F., of N. Y., $25; E. W. B., of N. Y., $25; L. H., of N. Y., $20; J. T., of Pa., $16; P. A., of N. J., $44; W. R. S., of Pa., $45; J. D. B, of R. I., $57; P. S., of Mich., $45; H. W. C., of Vt, $20; J. C. C., of Ill., $20; C. T. D., of N. J., $20; C. F. B, of Mass., $16; G. S., of N. Y., $10; A. B. & N. H. S., of Vt, $20; M. F., of Conn., $25; H. & McN., of N. J., $16; N. C. S., of Conn., $41; J. A., Jr., of Ill., $25; F. J. N., of Mo., $10; G. S., o Maine, $20; J. W., of Mo., $16; J. G., of R I., $30; J. C., of U. S. A., $30; J. P. B., of Ill, $30; G. O. W., of Mass., $16; J. J. L., of N. Y., $20; G. T., of Conn., $20; A. C., of Cal., $45; D. & N., of N. Y., $16; A. A., of N. Y., $20; E. J. E, of Tenn., $20; L. D. C., of Mich., $42; T. B, of N. Y., $44; H. & B., of N. J., $32; T. C., of N. Y., $22; G. M. Jr., of Ill., $25; E. P. of Mass., $16; C. W., of Mich., $15; M. & H, of N. Y., $34; J. G. B., of Mass., $16; D. B., of N. Y., $16; H. S. B., of La., $25; G. M, of England, 21; A. C. C., of N. Y., $100; M. & G., of N. J., $16; H. B. H., of Ill., $10; G. S., of Pa., $25; R. & B., of N. J., $375.

Persons having remitted money to this office will please to examine the above list to see that their initials appear in it, and if they have not received an acknowledgement by mail, and their initials are not to be found in this list, they will please notify us immediately, and inform us the amount, and how it was sent, whether by mail or express.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office, from Wednesday, Nov. 18, to Wednesday, Nov. 25, 1863:—

A. S. L., of N. Y.; W. N., of N. Y.; E. W. B., of N. Y.; G. B. O., of N. Y.; H. C., of England; H. K. J., of Conn.; H. S. B., of La.; H. & E., of Mass.; L. E. P., of Mich.; E. K. B., of U. S. A.; G. M., Jr, of Ill.; M. & H., of N. Y.; M. H. F., of N. Y.; J. D. B., of Mass.; G. S., of Pa.; A. P., of England; J. G., of R. I.; F. & P., of N. Y.; D. L., of Scotland; F. & O., of Mass.; L. H. W, of Mass.; R. T., of N. Y.; W. F. R., of N. Y.; B. M., of N. Y.; T. B., of N. Y.; W. L., of Va.; J. L. K., of N. J.; J. A., Jr., of Ill.; M. & H., of N. Y.; G. M., of England; R D. C., of England (3 cases); M. F., of Conn.

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PROPOSALS FOR MORTAR SHELLS.
ORDNANCE OFFICE, WAR DEPARTMENT.
WASHINGTON, Nov. 18, 1863.

Sealed Proposals will be received at this office until 4 o'clock P. M., on the 22d of December next, for the delivery of fifty thousand 10-inch mortar shells, in the following quantities at the following arsenals, viz:—

At the Watertown Arsenal, Watertown, Mass., 5,000.
At the Watervliet Arsenal, West Troy, N. Y., 5,000.
At the New York Arsenal, Governor's Island, 25,000.
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These shells are to be made of the kind of metal, and inspected after the rules laid down in the Ordnance Manual. Drawings can be seen at any of the United States Arsenals. The shells are to be inspected at the foundry where cast, free of charge for transportation, or handling until delivered at the Arsenal.

Deliveries must be made at the rate of not less than five per cent. per week of the number of projectiles contracted for; the first delivery to be made within twenty days after the date of the contract, and any failure to deliver at a specified time will subject the contractor to a forfeiture of the number he may fail to deliver at that time.

Separate bids must be made for each Arsenal if the bidders propose to deliver at more than one. No bid will be considered from parties other than regular founders or proprietors of works, who are known to this Department to be capable of executing the work contracted for in their own establishments.

Each party obtaining a contract will be required to enter into bonds, with approved sureties for its faithful execution.

The Department reserves the right to reject any or all bids, if not deemed satisfactory, for any cause.

Proposals will be addressed to "Brigadier-General George D. Ramsay, Chief of Ordnance, Washington, D. C.," and will be endorsed "Proposals for Mortar Shells." GEORGE D. RAMSAY,
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☞ The above or any other of my Practical and Scientific Books, sent by mail *free of postage*. My Catalogue will be gladly furnished *free of postage* to any one who will send me his address. HENRY CAREY BAIRD, Industrial Publisher, 406 Walnut street, Philadelphia. 23

PROPOSALS FOR TIMBER FOR THE NAVY.
BUREAU OF ORDNANCE, NAVY DEPARTMENT,
November 16, 1863.

Sealed Proposals, indorsed "Proposals for Timber," will be received at this Bureau until 3 o'clock P. M., of the 20th day of December next, for furnishing and delivering under contract, at the several Navy-yards at Portsmouth, N. H., Boston, New York, and Philadelphia, the following described timber and plank, for Ordnance purposes:—

Class 1. White Oak for Gun Carriages.
Class 2. White Pine and White Wood.
Class 3. White Ash and Hickory.
Class 4. Gum Logs.

Separate offers must be made for the supply at each of the Navy-yards named, and for the White Oak and the Hickory, White Wood, White Ash, and Pine; but the offers must be for all of each description for each Navy-yard.

Bidders are referred to the Ordnance officers at the several Navy-yards and stations, and to the Chief of the Bureau of Ordnance, Navy Department, who will furnish them with printed schedules, giving description of the "Timber," time of deliveries, and other particulars. H. A. WISE, Chief of Bureau.
23 4.

BAIRD'S LATEST CATALOGUE OF PRACTICAL and SCIENTIFIC BOOKS, sent free of postage to any address. HENRY CAREY BAIRD,
1 Industrial Publisher, 406 Walnut street, Philadelphia.

TO MECHANICAL DRAUGHTSMEN.—A YOUNG MAN (having had some experience) is desirous of a situation, where he can fully qualify himself in the art of mechanical drawing, with a view to a permanent situation. Can give the best of reference as to character and ability. Address stating terms, &c., GEORGE H. REMINGTON, Centerdale Post-office, North Providence, R. I. 1*

WANTED A SECOND-HAND WOOD SURFACING Planer Machine. State lowest price and particulars to H. H. H., 195 Broadway, Saratoga Springs. I have for sale 50 feet of nearly new 9-inch leather belting, best quality, also 14 feet of 2-inch shafting. 1*

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ARCHBISHOP WHATELY AND MR. NELSON SIZER —Their Portraits, Biographies, and Characters—A Compound Nature—How Ghosts are made—Incongruities of Character—What might be done with Money—How the Savage Reckons Figures—Doing Good. TOBACCO—Its Effects on Body and Mind—Temperate Smoking—The Hair Trade—Light Hair, Brown Hair, Black Hair—Shearing the Girls—Extent of the Trade—Railways of the World—Extent—Cost—Influence on Civilization—The Two Great Empires Russia and America—with interesting facts, in the December—Double number—PHRENOLOGICAL JOURNAL and LIFE ILLUSTRATED. Only 15 cents. By first mail. A new volume in January. Now is the time to subscribe $1 50 a year. Address FOWLER & WELLS, No. 308 Broadway, New York. 23

PROPOSALS FOR HEAVY PROJECTILES.

ORDNANCE OFFICE, WAR DEPARTMENT,
WASHINGTON, Nov. 16, 1863.

Sealed proposals will be received at this office until 4 o'clock, P. M., on the 15th of December next, for Heavy Projectiles, to be delivered in the following quantities, at the undernamed arsenals, viz:—

AT THE WATERTOWN ARSENAL, MASS.
2,000 15 inch battering shot
2,000 5-inch shells
8,000 10-inch shot
5,000 10-inch shells
AT THE WATERVLIET ARSENAL, WEST TROY, N. Y
1,000 15-inch battering shot
1,000 15-inch shells
4,000 10-inch shot
2,000 10-inch shells
AT THE U. S. ARSENAL, GOVERNOR'S ISLAND, N. Y.
3,000 15-inch battering shot
3,000 15-inch shells
10,000 10-inch shot
8,000 10 inch shells
AT THE ALLEGHANY ARSENAL, PITTSBURGH, PA.
1,000 15-inch battering shot
1,000 15-inch shells
6,000 10 inch shot
3,000 10-inch shells
AT THE ST. LOUIS ARSENAL, ST LOUIS, MO.
2,000 10-inch shot
2,000 10-inch shells
AT THE WASHINGTON ARSENAL, WASHINGTON, D. C.
1,000 15-inch battering shot
1,000 15-inch shells
2,000 10-inch shot
3,000 10-inch shells.

The Projectiles are to be made of the kind of metal, and inspected after the rules laid down in the Ordnance Manual, with the exception of the 15-inch battering shot, which are to be made of gun metal, of tensile strength, ranging between 28,000 and 30,000 pounds to the square inch, and these must be cast from a reverberatory or air furnace. The metal is to be charcoal iron, and the sample to be tested is to be taken from the projectile.

Drawings of all these projectiles can be seen at any of the arsenals where they are to be delivered. The projectiles are to be inspected at the foundry where cast, but must be delivered at the various arsenals, free of charge for transportation or handling until delivered at the arsenal. Deliveries must be made at the rate of not less than five per cent per week, of the number of projectiles contracted for; the first delivery to be made within 30 days after the date of contract, and any failure to deliver at a specified time will subject the contractor to a forfeiture of the number he may fail to deliver at that time.

Separate bids must be made for each kind of projectiles; and if any bidder proposes to deliver at different arsenals, separate bids must be made for each kind at each place.

No bid will be considered from parties other than regular founders, or proprietors of works, who are known to this Department to be capable of executing the work contracted for in their own establishments.

Each party obtaining a contract will be required to enter into bonds, with approved sureties, for its faithful execution.

The Department reserves to itself the right to reject any or all bids, if not deemed satisfactory, for any cause.

Proposals will be addressed to "Brigadier-General George D. Ramsay, Chief of Ordnance, Washington, D. C.," and will be endorsed "Proposals for Heavy Projectiles."

GEORGE D. RAMSAY,
223 Brigadier-General, Chief of Ordnance

ORDNANCE OFFICE,
WAR DEPARTMENT, Washington, Nov. 20, 1863

That portion of the foregoing advertisement which relates to 15-inch Battering Shot, is withdrawn for the present.

GEO. D. RAMSAY,
Brigadier General Chief of Ordnance,

STEREOSCOPTICONS, MAGIC LANTERNS AND DISSOLVING View Apparatus with either the ox-hydrogen, ox-calcium, or kerosene oil light, by which pictures can be thrown on a screen and magnified to either 8, 10, 15, 20, 25, or 30 feet in diameter according to the size of the rooms. Photograph Scenes in America and Europe, pictures of places, incidents and battles of the present rebellion in great numbers from the above instruments. On hand and made by JAMES W. QUEEN & Co., Manufacturing Opticians, 924 Chestnut street, Philadelphia. Priced and illustrate Catalogue free. 22 3

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A NEW PATENT DRIER—WHICH IS EQUAL TO the English, but much cheaper, QUARTERMAN & SON, 114 John street, New York. 22 3m

THE SUBSCRIBER IS SOLE AGENT FOR A. A. SAGE'S "Yeast Riser." Persons wishing to purchase rights will address A. SNIDER, Armada, Mich. 22 6*

WANTED TO PURCHASE A STEAM ENGINE OF 80 to 100 horse power, of approved construction, in good running order, and on reasonable terms. Apply to E. WHITNEY, New Haven, Conn. 22 tf

PORTABLE ENGINE AND BOILER, WITH HOUSE, seven horse-power, suitable for driving piles, sawing wood, &c., in good order, for the low price of $400. Inquire of S. WILLISTON, East Hampton, Mass. 20 4

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TO INVENTORS.—PATENTEES WANTING GOOD agents to sell rights, address (with particulars of invention, &c.) H. WILBUR, Charlotte, Mich. 22 2*

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A VALUABLE WORK FOR INVENTORS PATENTEES AND MANUFACTURERS.

The publishers of the SCIENTIFIC AMERICAN have just prepared, with much care, a pamphlet of information about Patents and the Patent Laws, which ought to be in the hands of every inventor and patentee, and also of manufacturers who use patented inventions. The character of this useful work will be better understood after reading the following synopsis of its contents:—

The complete Patent Law Amendment Act of 1861—Practical Instructions to Inventors, how to obtain Letters Patent, also about Models—Designs—Caveats—Trade-marks—Assignments—Revenue Tax—Extensions—Interferences—Infringements—Appeals—Re-issues of Defective Patents—Validity of Patents—Abandonment of Inventions—Best Mode of Introducing them—Importance of the Specification—Who are entitled to Patents—What will prevent the Granting of a Patent—Patents in Canada and European Patents—Schedule of Patent Fees; also a variety of miscellaneous items on patent law questions.

It has been the design of the publishers to not only furnish, in convenient form for preservation, a synopsis of the PATENT LAW and PRACTICE, but also to answer a great variety of questions which have been put to them from time to time during their practice of upwards of *seventeen years*, which replies are not accessible in any other form. The publishers will promptly forward the pamphlet by mail, on receipt of six cents in postage stamps.

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1 Industrial Publisher, 406 Walnut street, Philadelphia.

$200, $150, $100, $50 PREMIUMS.—TO EDITORS, Ladies and Others. I will pay the above-named amounts for the best four articles on either my Soap, Saleratus, or Concentrated Potash. The article must state the writer's experience in using the goods, and must be not less than ten lines, and be published in the editorial columns of any good family newspaper. Any party wishing to compete for the above, and desiring further information, may address the undersigned. Each person writing and publishing a notice, as above, will mail a marked copy of the paper containing the notice to me, and also write me by mail, giving full address. The Premiums will be awarded on the fourth day of July, 1864. B. T. BABBITT, 64 to 74 Washington street, New York. 12 tf

NEW HAVEN, CONN., Oct. 22, 1863.

TO B. T. BABBITT:

SIR:—Observing your Premium advertisement in the SCIENTIFIC AMERICAN, I concluded to state, in a few words, what I knew of the merits of your soap, having used it enough to conscientiously say that it is all that it is represented to be.

I wish to ask you if it is necessary to write my name in full under the article, should I put it in one of the New Haven papers,

If the article, which is on the next page, is of no account, please say so, and that will end the matter; if it is acceptable, it will appear in the paper immediately. J. D. W.

One right, golden day that ever gave
To the world a man who cares to save
From countless times the toil of womankind.
One man with an ingenious mind
Who bestows a real gift to us;
Because experience proves it thus.
In every way its claims to aid,
Where's none but true assertions made.
Thus to affirm the truth we're bold,
Since using *this* we are not sold;

Saving our time and patience too—
Our friends will find this statement true.
One single trial, and you can
Perceive that BABBITT is the man.

J. D. W.

MATHEMATICAL INSTRUMENTS FOR ENGINEERS, Surveyors, Architects and Schools—Levels, Transits, Surveying Compasses, Drafting instruments, of brass and German Silver, of English, French, German and Swiss manufacture. For sale wholesale and retail by JAMES W. QUEEN & Co., 924 Chestnut street, Philadelphia. 22 3

FAIRMAN & WILLARD, MANUFACTURERS AND Dealers in Machinery, Steam Engines, Lathes, Planers, Drills, Chucks, Belting, and all kinds of supplies for railroad and machine shops. No. 55 John street, New York. 22 3*

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WATER WHEELS.—WARREN'S TURBINE WHEEL and improved oil stop, is acknowledged by cotton and woolen manufacturers, and those who are making the greatest saving in the use of water, to be superior to all other wheels in the country. For illustrated circular, address A. WARREN, Agent, American Water Wheel Company, No 31 Exchange street, Boston, Mass. 14 12*

SEWING MACHINES.—GROVER & BAKER'S NEW Lock-stitch Machine, No. 9, 495 Broadway. This is the best and cheapest machine for Tailors' use ever produced. Price $45. 13 13*

PORTABLE STEAM ENGINES—6, 8 AND 10-HORSE at $500, $625 and $780. For sale by S. C. HILLS, No. 12 Plat street, New York. c

STOVE POLISH.—A FIRE-PROOF ARTICLE. Q. & SON, 114 John street, N. Y. 11 15*

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INVENTORS AND CONSTRUCTORS OF NEW AND useful Contrivances or Machines, of whatever kind, can have their Inventions illustrated and described in the columns of the SCIENTIFIC AMERICAN on payment of a reasonable charge for the engraving.

No charge is made for the publication, and the cuts are furnished to the party for whom they are executed as soon as they have been used. We wish it understood, however, that no second-hand or poor engravings, such as patentees often get executed by inexperienced artists for printing circulars and handbills from, can be admitted into these pages. We also reserve the right to accept or reject such subjects as are presented for publication. And it is not our desire to receive orders for engraving and publishing any but good Inventions or Machines, and such as do not meet our approbation in this respect, we shall decline to publish.

For further particulars address—

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N. B.—Reliable orders filled for any part of the United States and 12 14*

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14tf GUILD, GARRISON & CO

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Die Unterzeichneten haben eine Anleitung, die Erfindern das Verhalten angibt, um sich ihre Patente zu sichern, herausgegeben, und verabfolgen solche gratis an dieselben.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an

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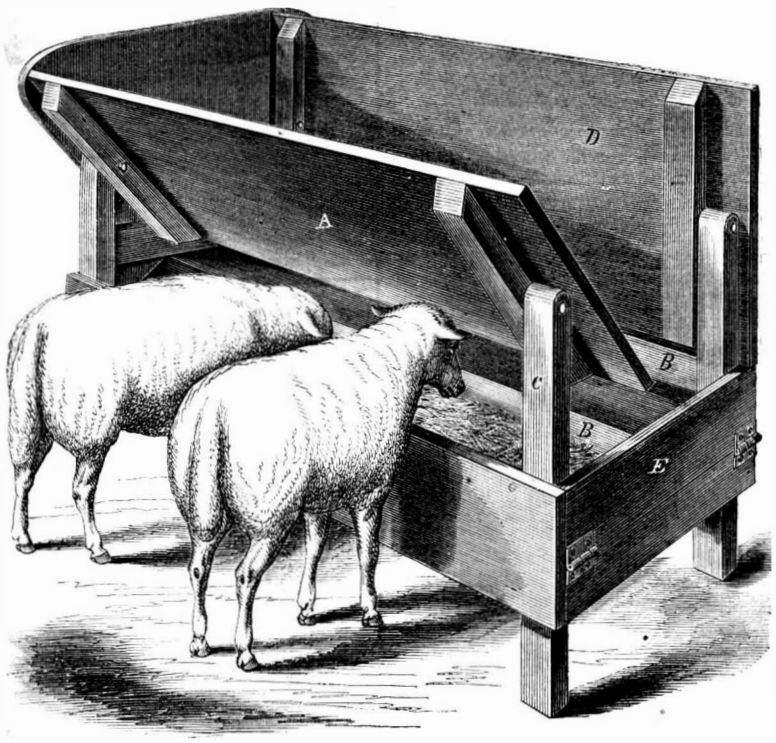
Improved Sheep Rack.

This apparatus is intended to economise feed and to obtain the greatest benefit from it by preventing the sheep from having access to the fodder except at proper times; it is also adapted to other purposes, being capable of conversion into a shearing table, and as a weather-proof salting house, or shed in the summer or mild seasons. The engraving represents

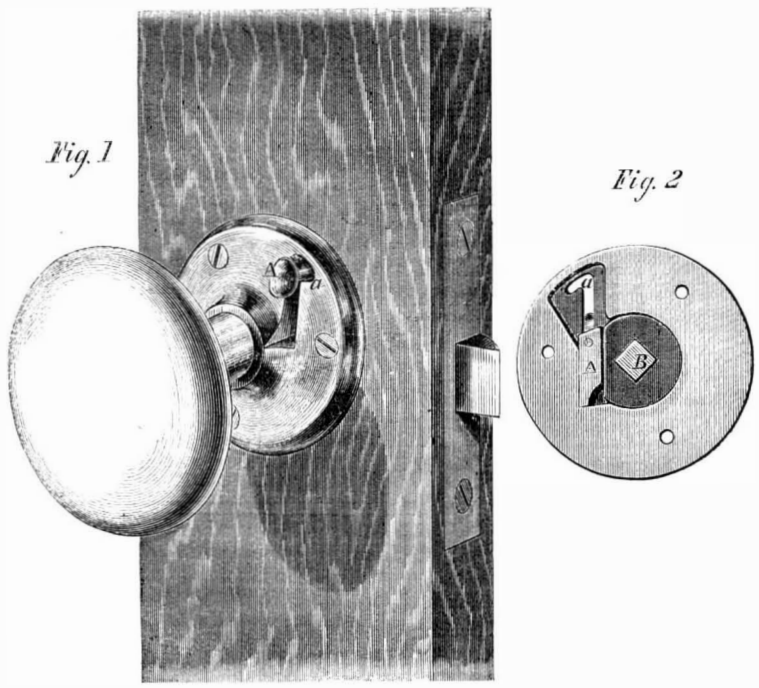


HALE'S SHEEP RACK.

one side, A, of the rack turned in, disclosing the feeding-troughs, B, and the internal arrangement of the rack or box, more properly speaking. These feeders, A, are swung on pivots in the upright bar, C, and when in the position indicated in the engraving on the side where the sheep are feeding, permit them to have access to the fodder at all times. When roots or fine feed are used in the feed troughs, it is necessary to clean them out occasionally; and to do this the feeder boards, A, are turned up, as shown at D, and the attendant can then go inside and sweep out the troughs through the door, E, without being hindered or delayed by the crowding or desire of the sheep to get at the feed. The feeding boards can also be turned up in a horizontal position, so that by merely placing a bar underneath the two leaves, when so turned up, a table is made which may be used for shearing on in the spring; or by partially inclining the sides in the form of a roof, and placing a ridge-piece over them, the salt, which it is usual to supply the sheep with at certain seasons, can be thrown in the troughs instead of scattered around under foot and on rocks to be wasted; the inclination of the roof serves to keep off rain and dew, and is thus turned to good account in this respect. A patent is now pending on this invention through the Scientific American Patent Agency, by Robert Hale of Fitchburgh, Mass.; and any information can be had by addressing the inventor at that place.

Improved Lock Catch.

Occasions frequently arise in the business of life where it becomes necessary to secure the doors of apartments against all intruders; keys are too clumsy and make too much noise, and the sensibilities of friends are sometimes wounded by the quick grating of one in the lock, warning them that their visits are not desired just at that particular time.



TOZER'S LOCK CATCH.

The lock catch herewith published is a very secure and excellent device for accomplishing the ends required of a bolt, often used as a fastening; in action it is inaudible or silent, and cannot cause any of the disagreeable features mentioned above.

We recommend this catch as a suitable and ingenious appliance to an ordinary door, whereby complete security against invasion is obtained without the aid of a lock, properly speaking, although the catch performs the same office. It is impossible to pick it from the outside, as nothing but a flush surface is presented, and the most expert burglar might exert his skill for hours without avail. The arrangement of the lock is so clearly shown that explanation is almost unnecessary. The side toward the reader is supposed to be in an apartment, and the catch, A, slides down when it is desirable to lock the door, and holds the knob as shown in Fig. 2. B is the handle, and A the catch; the small shoulder, *a*, serves to keep the catch in its place when the door is open, so that an accidental closing of the door will not result in barring out the lawful occupants of the room, as is the case sometimes with spring locks. These catches are made in all styles, either silver-plated, brass, or in lacquered iron.

This patent was obtained through the Scientific American Patent Agency, on Feb. 3, 1863, by J. F. Tozer, of Binghamton, N. Y. State, county, town, or shop rights to manufacture can be obtained; and further information can be had by addressing the inventor, or T. J. Mygatt, Binghamton, N. Y.

THE

Scientific American

FOR 1864!

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In this important department, so vitally connected with all the great interests of the country, no other journal can lay any claim whatever; as in its columns there is published a weekly Official List of the "Claims" of all patents granted at the U. S. Patent Office.

THE PRACTICAL RECIPES

alone are oft-times worth more to the subscriber than the amount of a whole year's subscription.

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No. 37 Park Row, New York.

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